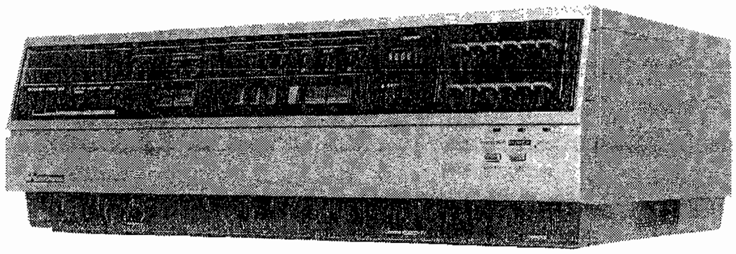
OCT. 1981
VTR–105

Mitsubishi VTR Service Manual Model HS-302E

V04470



VHS

Only casettes marked VHS can be used with this video casette recorder.

SPECIFICATION

Format : VHS PAL standard

Video recording system : Rotary, slant azimuth two-head helical scan system

Video signal system : PAL colour (system B.G) and CCIR monochrome signals, 625 lines

Tape width : 12.7mm

Tape speed : 23.39mm/sec

Recording time 240 min. (E-240 cassette)

Power requirement : Set to 220V
110/120/220/240V AC selectable (to be adjusted by your dealer), 50Hz, 48 watts (including Video Timer)

Temperature Operating : 5°C to 40°C
Storage : –20°C to 50°C

Aerial input : VHF Band channels 2 – 12
UHF Band channels 21 – 69

Aerial output : Set to channel 36
Channel 34 – Channel 38 selectable (to be adjusted by your dealer)

Video signals
Input : 0.5 to 2.0Vp-p/75 ohms
Output : 1.0Vp-p/75 ohms
S/N ratio : 43 dB
Horizontal resolution : Colour: More than 240 lines
Monochrome: More than 290 lines

Audio signals
Input : Mic –67dBs/10K ohms
Line –20dBs/50K ohms
Output : Line 0dBs/1K ohm
S/N ratio : More than 40dB
Frequency response : 70Hz – 8KHz (–10 dB)

Video timer
Clock : Digital clock 24 hour display format
Channel programmer: 1 Event Any time any channel in two weeks

Dimensions : 498mm (W) x 162mm (H) x 347mm (D)

Weight : 13.8 kg

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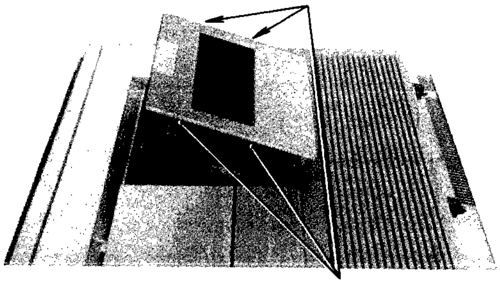
DISMANTLING PROCEDURE:

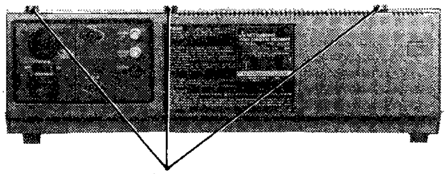
1. **Removal of cassette housing cover**
   Depress eject button to raise the cassette housing assembly and remove the 4 screws shown in Fig. 1. Lift the cover upward.

Fig. 1



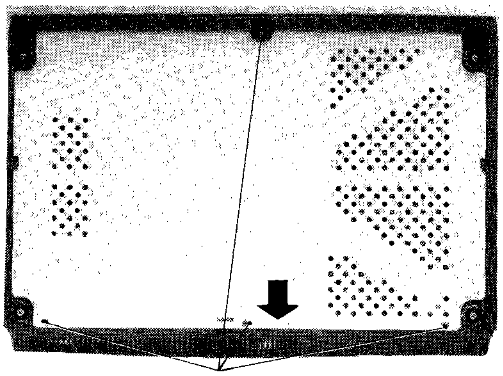
2. **Removal of top**
   Remove three screws retaining the cabinet top & sides are shown in Fig. 2, pull the cover up.

Fig. 2



3. **Removal of bottom cover**
   Remove three screws retaining the bottom cover shown in Fig. 3, pull the cover in the direction of the arrow.

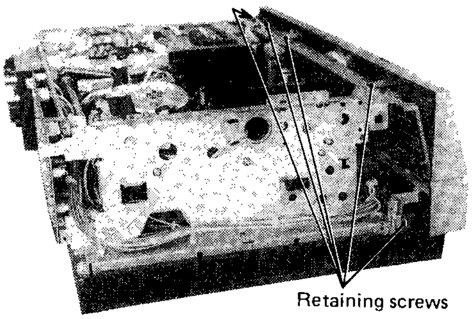
Fig. 3



4. **Removal of back cover**
   The back cover is held in place by the bottom and top covers. After removing the bottom and top covers as described in items 2 and 3, the back cover can be pulled off.

5. **Removal of front panel**
   Remove five screws shown in Fig. 4, pull it in the direction of the arrow.

Fig. 4



REMOVAL OF PRINTED CIRCUIT BOARDS (PCB'S)

CAUTION: Before attempting to remove or repair any PCB UNPLUG POWER CORD FROM REAR SOCKET.

Access to PCBs.

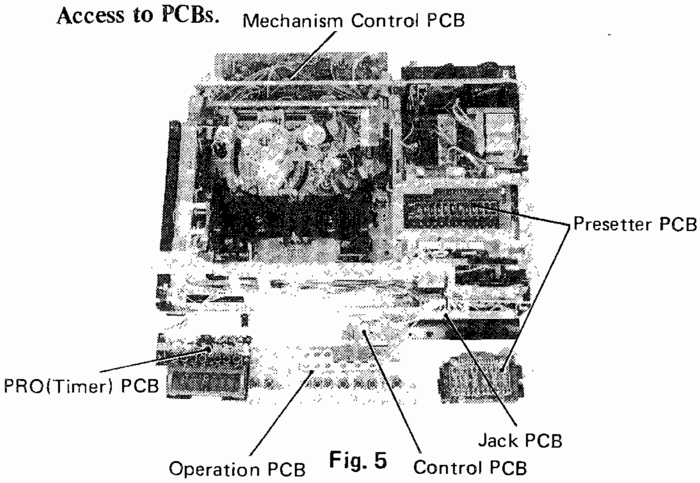

Mechanism Control PCB
Presetter PCB
PRO(Timer) PCB
Jack PCB
Operation PCB
Control PCB

Fig. 5

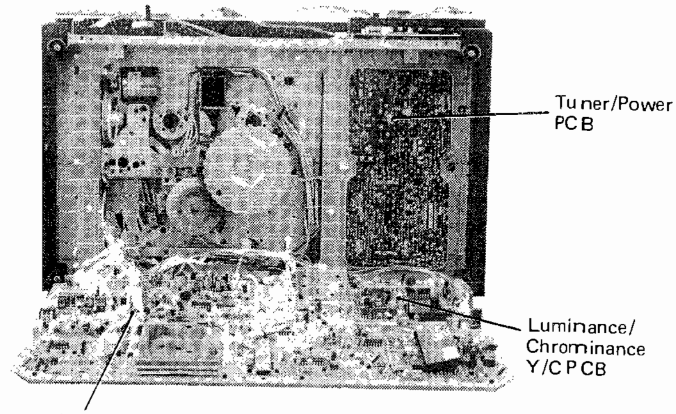

Tuner/Power PCB
Luminance/ Chrominance Y/C PCB
Audio/Servo PCB

Fig. 6

1. To Access the Luminance/Chrominance (Y/C) and Servo Printed Circuit Board, remove the three screws indicated with arrow marks stamped on the frame. (See Fig. 7) The Board, will now swing out.

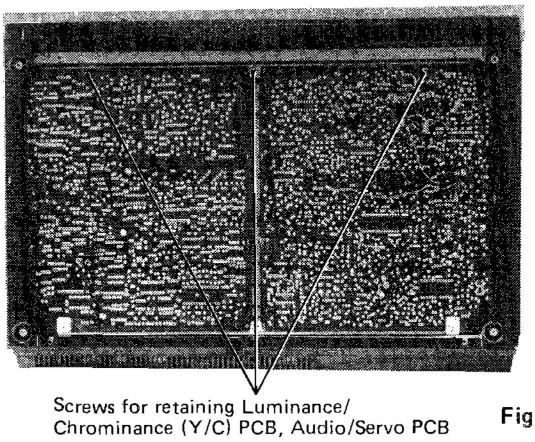
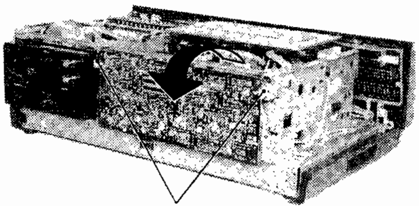

Screws for retaining Luminance/ Chrominance (Y/C) PCB, Audio/Servo PCB

Fig. 7

2. **PCB MC (Mechanism control)**
Unlock the two printed circuit board supports shown in Fig. 8, and swing the printed circuit board down.

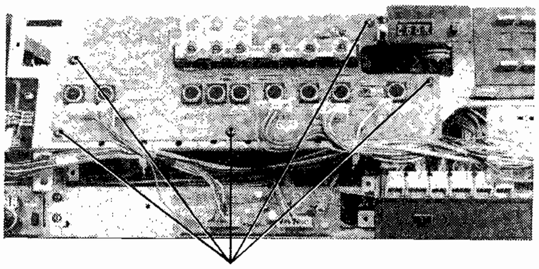
Fig. 8



Supports for
Mechanism Control PCB

3. **PCB OPE (Operation)**
Remove the screws retaining the printed circuit board. (See Fig. 9)

Fig. 9

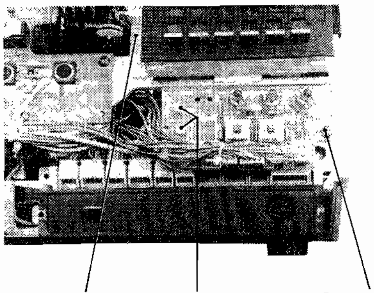


Screws for retaining
OPE PCB

4. **PCB Cont (Control)**
Remove the screws retaining the printed circuit board and unlock the two supports. (See Fig. 10)

5. **PCB-CH-SW**
Remove the plastic rivets retaining the printed circuit board shown in Fig. 10.

Fig. 10



Retaining plastic
rivet
Supports for
Control PCB
Screw for retaining
Control PCB

6. PCB-PRO (Timer/Programmer)

Remove the two screws retaining the printed circuit board shown in Fig. 11.

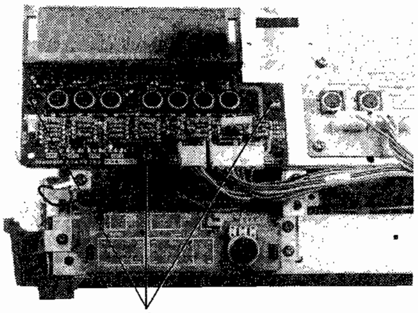

Screws for retaining
CH-PRO PCB

Fig. 11

7. PCB Tuner (Tuner/Power supply)

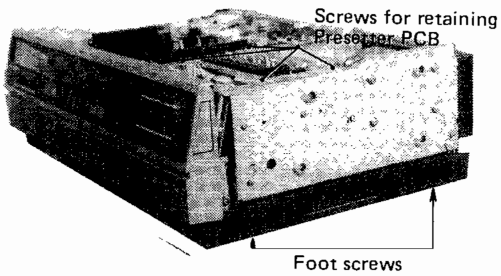

Screws for retaining
Presetter PCB
Foot screws

Fig. 12

(1) Remove the two screws retaining the right-hand feet.

(2) Loosen the four screws retaining the Presetter printed circuit board shown in Fig. 12 and remove the Presetter printed circuit board.

(3) Remove six screws retaining power block, and pull out the power block. (See Fig. 13)

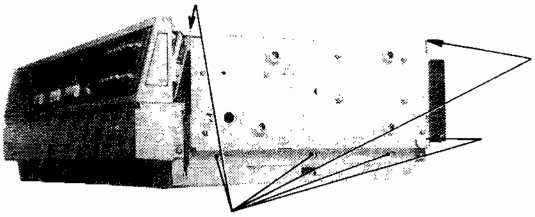

Screw for retaining
Power block

Fig. 13

(4) Place an insulator under the Power block assembly as shown in Fig. 14 below.

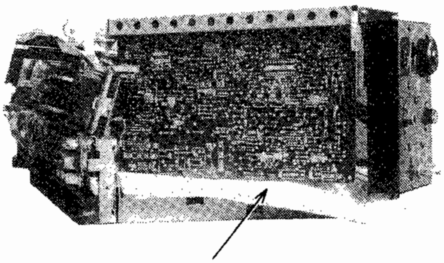


Fig. 14

INTERCHANGING METHOD AND ADJUSTMENT

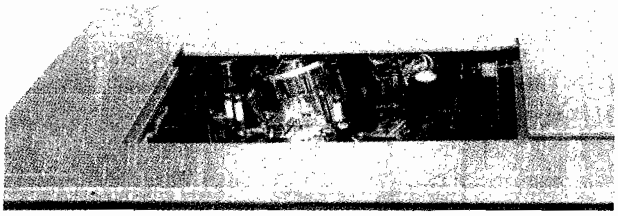
1. MECHANISM ADJUSTMENT

1-1 Cleaning

The following items require cleaning after servicing to maintain satisfactory performance.

1-1-1 Video head cleaning

(1) Remove the cassette housing cover (Refer to item 1 on page 1)



(2) Moisten a clean piece of chamois with isoproprylalcohol or a professional head cleaner. Hold the chamois to the drum assembly and rotate the drum clockwise by hand to clean the video heads and tape path.
[Note] Never move the chamois vertically while cleaning, otherwise the head will be damaged.

(3) After the heads are cleaned allow the cleaned portion to dry thoroughly before running a tape. Otherwise the tape and head may be damaged.

1-1-2 Transport system

(The transport mechanism should be cleaned after every 500 Hours of use to maintain proper operation.)

1. The following components of the transport system require occasional cleaning: Tension Pole, Sub-loading Guide Roller, Full Erase Head, Impedance Rollers, Guide Rollers, Slant poles, Upper and Lower Drum assembly, Audio Erase Head, Audio/Control Head, Capstan, and Pinch Roller.
2. To clean use a small piece of gauze moistened with alcohol.
3. Use extreme care when cleaning the video heads and Drum assembly to prevent damage. Avoid touching the Drum assembly with your fingers as a deposit of oil will result. NEVER clean the Drum assembly by moving the cleaner pad vertically.
4. After cleaning the transport mechanism, allow it to dry thoroughly before loading a tape. If this is not done damage to the heads or tape may result.

1-1-3 Reel Drive System

1. Reel Disc Brake Surfaces require occasional cleaning. To clean use a small piece of gauze moistened with alcohol.

1-2 Mechanism Adjusting Jig

In order to adjust the mechanism completely, the following special jigs are necessary;

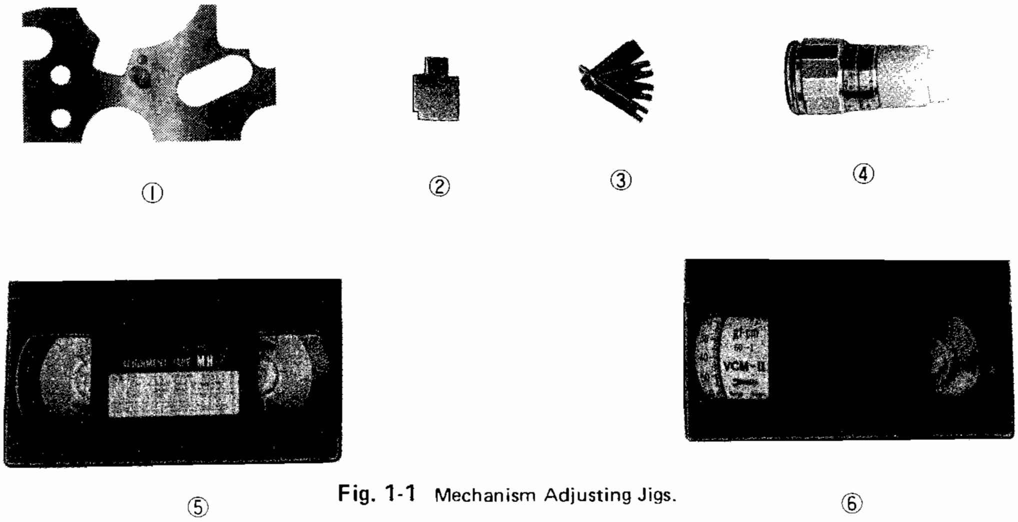


Fig. 1-1 Mechanism Adjusting Jigs.

1-2-1 Jig List

1. Master Plane jig
2. Reel disc height adjust jig
3. 0.3, 0.5, 0.7 and 1.5mm feeler gauge
4. Torque gauge, Torque gauge head
5. Alignment tape (MH-2)
6. Back tension adjust jig
7. Self-recording and playback check tape

The above-mentioned special jigs, general tools and hex, key of 1.5mm and 2mm are necessary.

1-2-2 Other Necessities

Isopropryl Alcohol, Spindle oil (Oiler), Machine grease (XLA-2), Gause, Cloth, etc.

1-3 Cassette Housing

1-3-1 Removal

1. Depress the Eject button to raise the cassette housing.
2. Remove the right and left housing screws “A” “B” “C” and grounding springs.
3. Remove the E ring of the coupling lever from the oil damper housing as shown in Fig. 1-2 (b).
4. Lift the housing being careful not to hit any other mechanical parts.

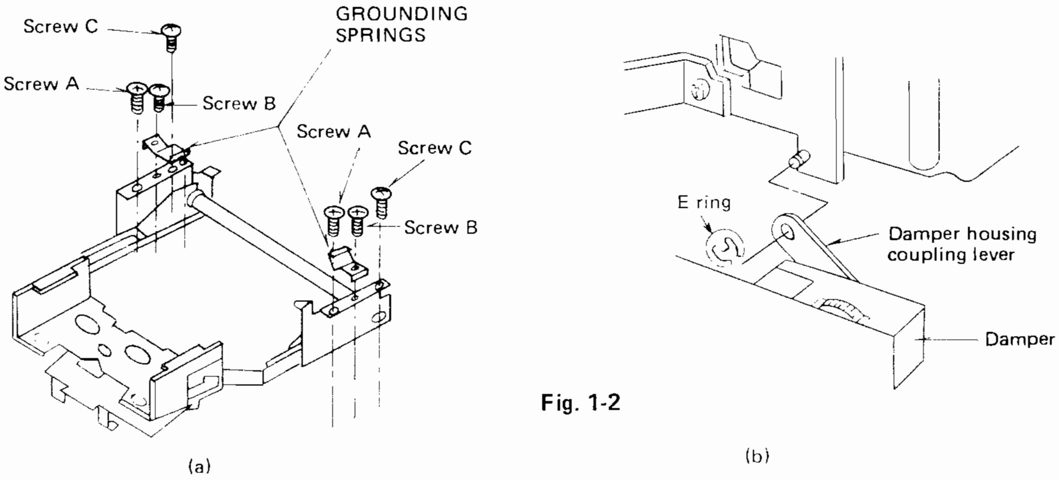

Screw C
Screw A
Screw B
GROUNDING SPRINGS
Screw A
Screw C
Screw B
(a)
E ring
Damper housing coupling lever
Damper
(b)

Fig. 1-2

1-3-2 How to reinstall the Cassette Housing

1. Carefully set the Cassette Housing assembly in place without touching any of the transport components (Capstan shaft, Drum assembly, etc.).
2. Install screws "A" and "C" as shown in Fig. 1-2(a) and the damper lever as shown in Fig. 1-2(b).
3. Push the Cassette Housing down until it locks in place then depress the Eject button. Do this several times to check for proper operation.
4. Insert a E-180 cassette tape into the Cassette Housing and push the housing down until it locks in place. Make sure the cassette tape is properly seated into the transport mechanism.
   NOTE: Due to the wearing of the positioning holes on a cassette tape with use it is best to use a new cassette tape.
5. Install the ground springs and secure in place with screws "B". (See Fig. 1-2 (a))
6. Again check for proper operation of the Cassette Housing assembly.

1-4 Installation of Master Plane jig

1. Remove the Cassette Housing Cover and the Top Cover of the recorder.
2. Insert a Dummy Cassette in the Cassette Housing and depress the Cassette Housing to lock in place. Place the recorder in the PLAY mode.
   NOTE: A Cassette cartridge with the tape removed and light path blocked used as a may be substituted for the Dummy Cassette.
3. Unplug the power cord from the A.C. source removing power from the recorder.
4. Remove the six screws securing the Cassette Housing to the recorder.
5. Install the Master Plane jig being careful not to hit the Drum assembly which may cause damage. (See Fig. 1-3 below)

Alternative Method

1. Remove the Cassette Housing Cover and the Top Cover of the recorder.
2. Remove the Cassette Housing as described in section 1-3-2.
3. Cover the "END SENSOR" with a small piece of tape and with your hand close the cassette switch.
4. Place the recorder in the PLAY Mode, then after loading has completed switch off mains at rear.
5. Install the Master Plane jig being careful not to hit the Drum assembly. (See Fig. 1-3)

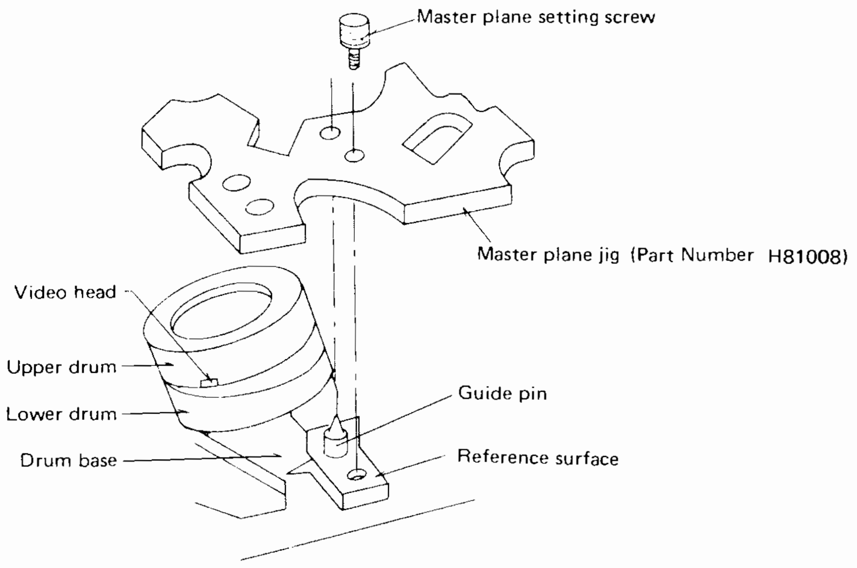


Fig. 1-3

1-5 Pinch roller Pressure Confirmation and Adjustment

1. Remove the top cover and cassette housing cover.
2. Insert a dummy cassette and place the recorder in the PLAY mode.
3. Check to see that the gap between the pinch roller and capstan shaft is 0.8mm±0.2mm. (See Fig. 1-4)
4. If the gap is less than 0.6mm bend the pause lever in the direction of arrow ⓐ as illustrated in Fig. 1-6. If the gap is larger than 1.0mm bend the lever in the direction of arrow ⓑ.
5. By hand gently press the pinch roller against the capstan shaft and make sure there is less than 0.1mm variation between the capstan shaft and the surface of the pinch roller.

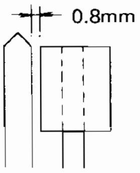


Fig. 1-4

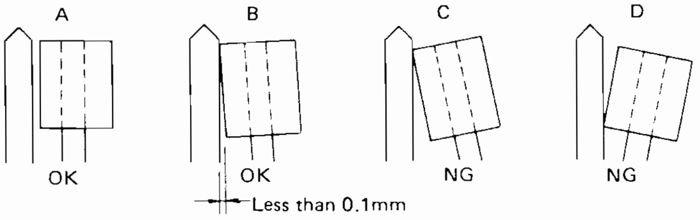


Fig. 1-5

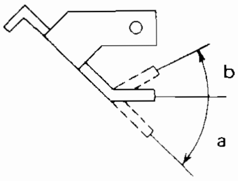


Fig. 1-6 Pause Lever

1-6 Subloading Guide Roller & Takeup Guide Pole Height

Install the master plane jig as described in section 1-4.

1-6-1 Subloading Guide Roller Height (See Fig. 1-7)

1. Place the square between the collars of the guide roller. If this is not possible, loosen the hex screw and adjust the height of the guide roller by turning the ⊖ screw on top of the guide roller. Refer to "A" in Fig. 2-7 below.
2. Re-tighten the hex screw firmly.

1-6-2 Take-up Guide Pole Height (See Fig. 1-8)

1. Place the square between the collars of the guide pole. If this is not possible loosen the hex screw and adjust the height of the guide pole by turning the ⊕ screw on top of the guide pole. Refer to "A" in Fig. 1-8. below.
2. Re-tighten the hex screw firmly.

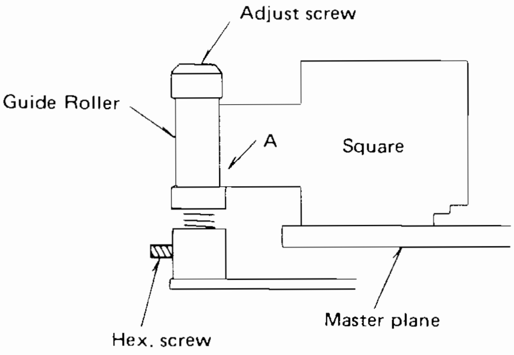


Fig. 1-7

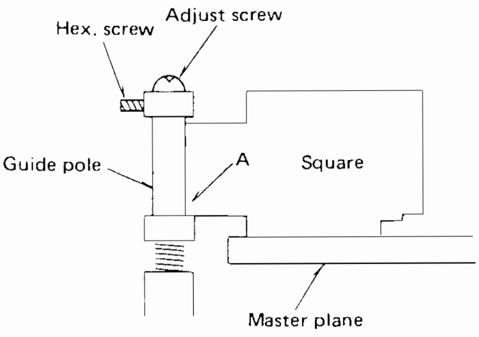


Fig. 1-8

1-7 Capstan-Shaft Adjustment

1. Install the master plane jig as described in section 1-4.
2. Apply the square to the capstan shaft from two different directions to check that the square is flush with the capstan shaft. Refer to Fig. 1-9 and 1-10 below.
3. If the capstan shaft is not perpendicular to the master plane jig (the square is not flush with the capstan shaft) problems such as tape creases, tape breakage, or audio level fluctuations may result. To adjust fit a shim between the capstan motor and base.

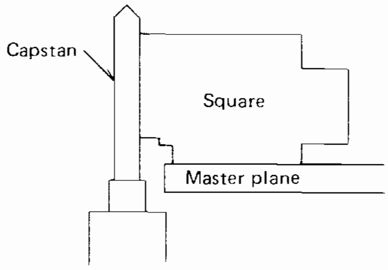

Capstan
Square
Master plane

Fig. 1-9

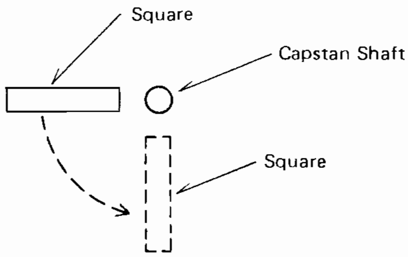

Square
Capstan Shaft
Square

Fig. 1-10

1-8 Reel Disc Height Adjustment

1. Install the master plane jig as described in section 1-4.
2. Using the Height Adjust jig (square) check the reel height. Refer to Fig. 1-11.
3. If adjustment is necessary remove the PCB-Operation as described on page 6. Loosen the two hex screws in the base of the Reel Disc. Refer to Fig. 1-11.
4. Adjust the Reel Disc height so that the Reel Disc is lower than space A and higher than space B as shown in Fig. 1-11.
5. Tighten the hex screws and re-install the PCB-Operation.

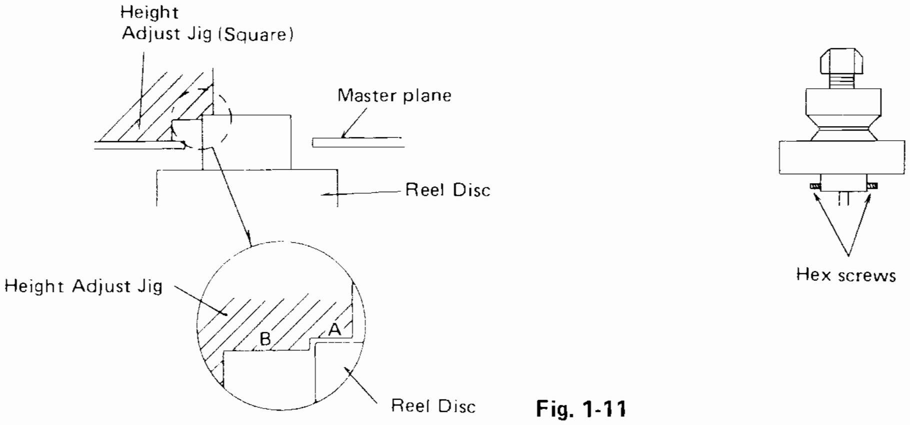
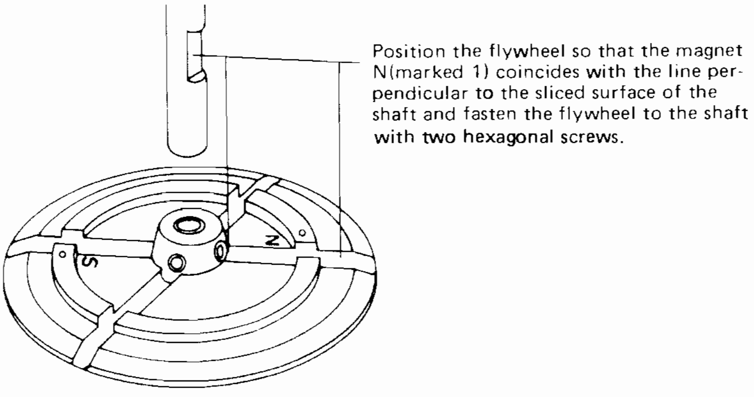

Height
Adjust Jig (Square)
Master plane
Reel Disc
Height Adjust Jig
B
A
Reel Disc
Hex screws

Fig. 1-11

1-9 Drum Flywheel Gap Adjustment

1. Insert the flywheel in the direction shown in Fig. 1-12 so that the gap between the magnet of the drum flywheel and PICK-UP-HEAD is 0.25mm at the thinner magnet side.
2. Set the recorder to the play mode.
3. Set the oscilloscope to connector SA pin ② of PCB-SERVO while observing the out put waveform adjust the gap so that the regular pulse $\boxed{a}$ is 1.4V or more in both positive and negative directions.
   The head may be moved as shown in Fig. 1-14 for fine adjustment.
   ⊖ Driver in the direction as shown in the figure.
   NOTE: There is some possibility of the head position deviation when the screw is fastened again. Re-check waveform screw.



Position the flywheel so that the magnet N(marked 1) coincides with the line perpendicular to the sliced surface of the shaft and fasten the flywheel to the shaft with two hexagonal screws.

Fig. 1-12

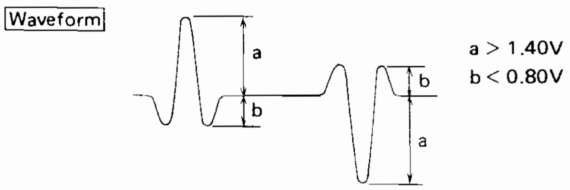

Waveform
a
b
b
a
a > 1.40V
b < 0.80V

Fig. 1-13

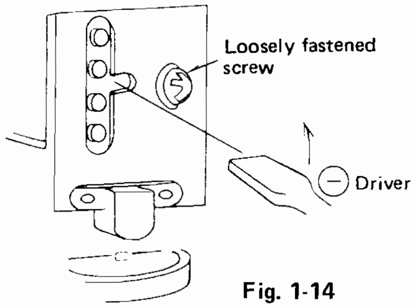

Loosely fastened screw
Driver

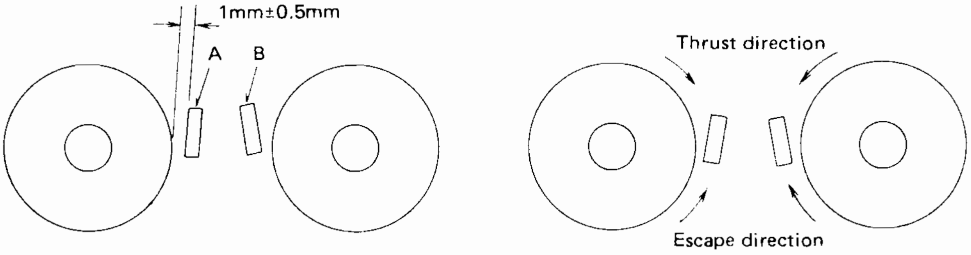
Fig. 1-14

4. Make sure that the overshoot $\boxed{b}$ shown in Fig. 1-13 is no more than 0.8V.

1-10 Take-up and Supply Brake Performance Check

1-10-1 Adjustment Procedure

1. Remove the cassette housing assembly.
2. With the plunger of the lock solenoid (L571) pulled in check to see that the clearance between the reel discs and brakes A and B in Fig. 1-15 (a) is 1mm±0.5mm.
3. If the cleance is not correct adjust the position of the lock solenoid (L571) for a clearance of 1mm±0.5 mm.
4. Check to see that the brake is applied when the unit is in the STOP mode.
5. Apply the torque meter to the reel disc. Allow the reel disc to rotate in the "thrust" direction shown in Fig. 1-15(b) and check for a meter indication of 0.5~0.7kgcm or more.
6. If the torque is less than 0.5kgcm, clean the brake surface and the reel disc.
7. Allow the reel disc to rotate in the escape direction shown in Fig. 1-15(b) and check for a meter indication of 0.02kgcm or more.


1mm±0.5mm
A
B
Thrust direction
Escape direction

(a) Fig. 1-15 (b)

1-11 Back-tension Check and Adjustment

1-11-1 Checking Method

1. Insert the back tension jig, and set the recorder to playback mode.
2. Check that the mean value is 36 to 38 g-cm on the supply side.

1-11-2 Adjustment Method

1. If the mean value exceeds 38 g-cm, adjust the value to 37 g-cm by bending the spring holder (A) in the direction of arrow ⓐ as shown in Fig. 1-16.
2. If the pointer mean value is much less than 36 g-cm, adjust the pointer mean value for 37 g-cm by bending the spring holder (A) in the direction of arrow ⓑ.
3. The deviation of back tension value is not absolutely specified. However, if it fluctuates by more than 5 g-cm, after a stabilizing period, then a problem exists in one of the associated parts. Check and repair as required.
4. With the cassette housing assembly installed and the recorder set to PLAY mode at the start of a E-180 tape, ascertain that the tension pole does not hit the bracket of the cassette housing.
5. Ascertain that no skew distortion is observed during recording or playback.

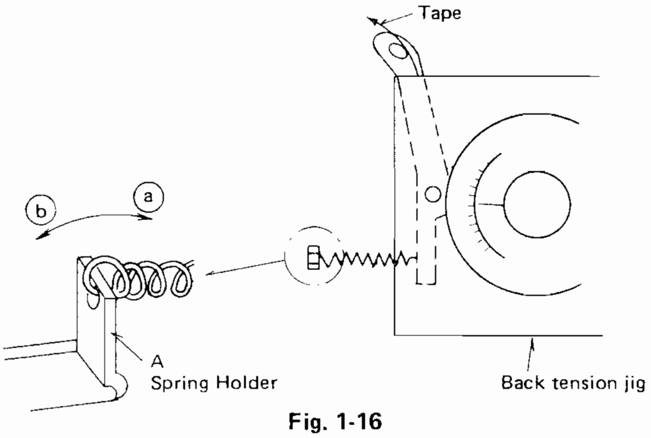


Fig. 1-16

1-12 Take-up Torque Check

1-12-1 Checking Method

1. Remove the cassette housing assembly.
2. With the tape unloaded (cover the end sensor with a small piece of black tape and close the cassette switch), set the recorder to the PLAY mode.
3. Apply a torque meter to the take-up reel disc.
4. Softly grip by hand the rotating torque meter and gradually increase the grasping power until the torque gauge pointer and scale plate rotate at the same speed in the hand, and read the torque value then indicated.
5. Ascertain that the torque meter mean reading is between 40 and 100 g-cm.
6. If the torque is not within the expected limits through the above measuring method, or the torque fluctuates largely in value check the voltage of the take-up reel motor or replace the motor. The voltage should read approximately 2V.

1-13 FF/REW Torque Check

1-13-1 Checking Method

1. Remove the cassette housing assembly.
2. Without loading a tape (cover the end and start sensors with a small piece of black tape and close the cassette switch), set the recorder to the FF/REW mode.
3. Apply the torque meter to each reel disc in turn.
4. Ascertain that the torque meter mean value is more than 250 g-cm.

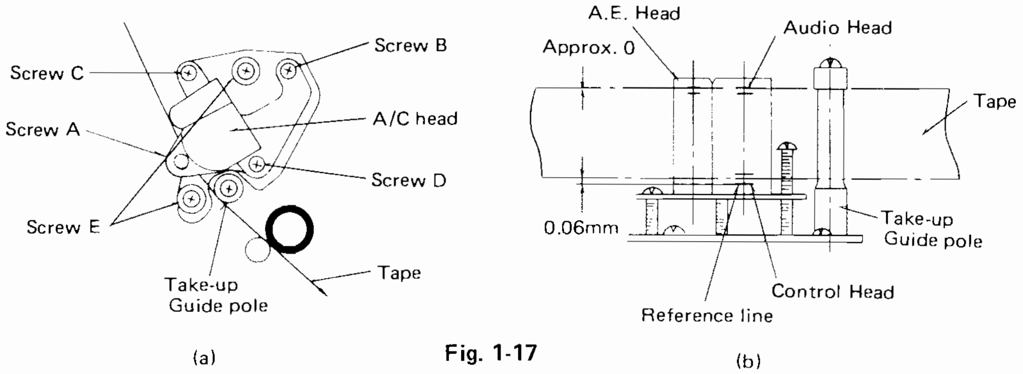
   NOTE: Make sure the Supply and Take-up Reel Disks rotate, that the brake is free and each disc is trying to revolve.

5. If the torque does not indicate the specified value through the above procedure, or the torque fluctuates far beyond that specified above, replace the motor in question.

1-14 Audio/Control Head Adjustment

1-14-1 Tape Running Adjustment around A/C Head

1. Check the tape path in the playback mode using a self-recorded/playback tape. It is vital for the tape to run smoothly, maintaining a clean, flat surface condition between the guide roller and the take-up impedance roller and the guide pole. The guide pole and the capstan shaft are critical.
2. If the tape is skewed (twisted) between the A/C head and the guide pole, a satisfactory picture can not be obtained. Be sure that the tape is not running on to the edge of the guide pole and no fine folds are observed in the tape.
3. If any abnormality is found, slightly adjust the head with Screws A, B and C shown in Fig. 1-17(a).
   NOTE: Do not move the guide pole.
4. The A/C head should be positioned for the tape as illustrated in Fig. 1-17(b). If the height of the head deviates, adjust it with Screws A, B and C.
   NOTE: It is necessary to set screw D at the location shown in Fig. 1-18.
5. Item 1-15-2 must be checked if the A/C head position is disturbed.



(a) Fig. 1-17 (b)

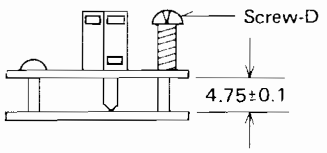


Fig. 1-18

1-14-2 Adjustments of Audio/Control Heads and Azimuth

After checking with a self recorded tape as shown in Fig. 1-17 change to an alignment tape type MH2.
Caution if the alignment tape is used with an improperly adjusted A/C head path, the tape may be damaged.

1. Replay the 6KHz section stairsteps of the alignment tape and observe the waveform at testpoint TP-3A (AUDIO OUT) of the Audio printed circuit board.
2. Turning Screws A, B and C slightly, adjust the audio output level for maximum with the relative positions as specified in Fig. 1-17(b).
3. With Screw A as a reference, adjust C for azimuth, adjust B for maximum audio output level and minimum level fluctuation consistant with un-creased tape at the guide pole portion.

   NOTE: The upper and lower edges of the take-up guide pole form a reference.
   If the audio level fluctuation is over 2dB p-p, the tape is being drawn near to the lower edge.
   Any fold in the tape at the take-up guide pole will greatly reduce the tape life due to the large tape tension at this position.
   Therefore any adjustment of the take-up guide pole must be made for the minimum amount of tape creasing.

1-15 FM Preset Adjustment

1-15-1 Adjusting Method

1. Play back the stair step section of the alignment tape.
2. Connect an oscilloscope to TP2C (P.B FM OUT) of the Y/C PCB.
3. Turning the tracking control read the maximum FM OUTPUT level at TP-2C and make note of it.
4. Set the tracking control to the click-stop position.
5. Loosen two screws E of the A/C head base shown in Fig. 1-17(a).
6. Slightly shift the whole A/C head base in the direction of the tape back or forward travel to obtain the maximum FM out put at TP-2C (approximately 1V p-p). Connect the EXT trigger of the oscilloscope to TP-4C on the PCB-SERVO (25Hz Flip-Flop Pulse). Tighten the two screws E loosened in step 5 above.
7. Ascertain that maximum output is obtained when the tracking control is set at the "click stop" position compared to other settings of the tracking control.

[Note]

1 Check that 'lip-sync' is correct on a pre-recorded cassette.

2 Follow item 2-3-5 "Tracking Preset Adj."

2. Circuit Adjustments

2-1 Power Supply (Voltage) Adjustment

2-1-1 REG 12V

1. Set the recorder to the RECORD mode.
2. Adjust VR901 so that the voltage at TP-9A (REG 12V) on PCB-TUNER is 12V±0.1V.
3. Confirm that the ripple component in the REG 12V is less than 5mVp-p with an oscilloscope.

2-2 Mechanism Control Circuit Adjustment

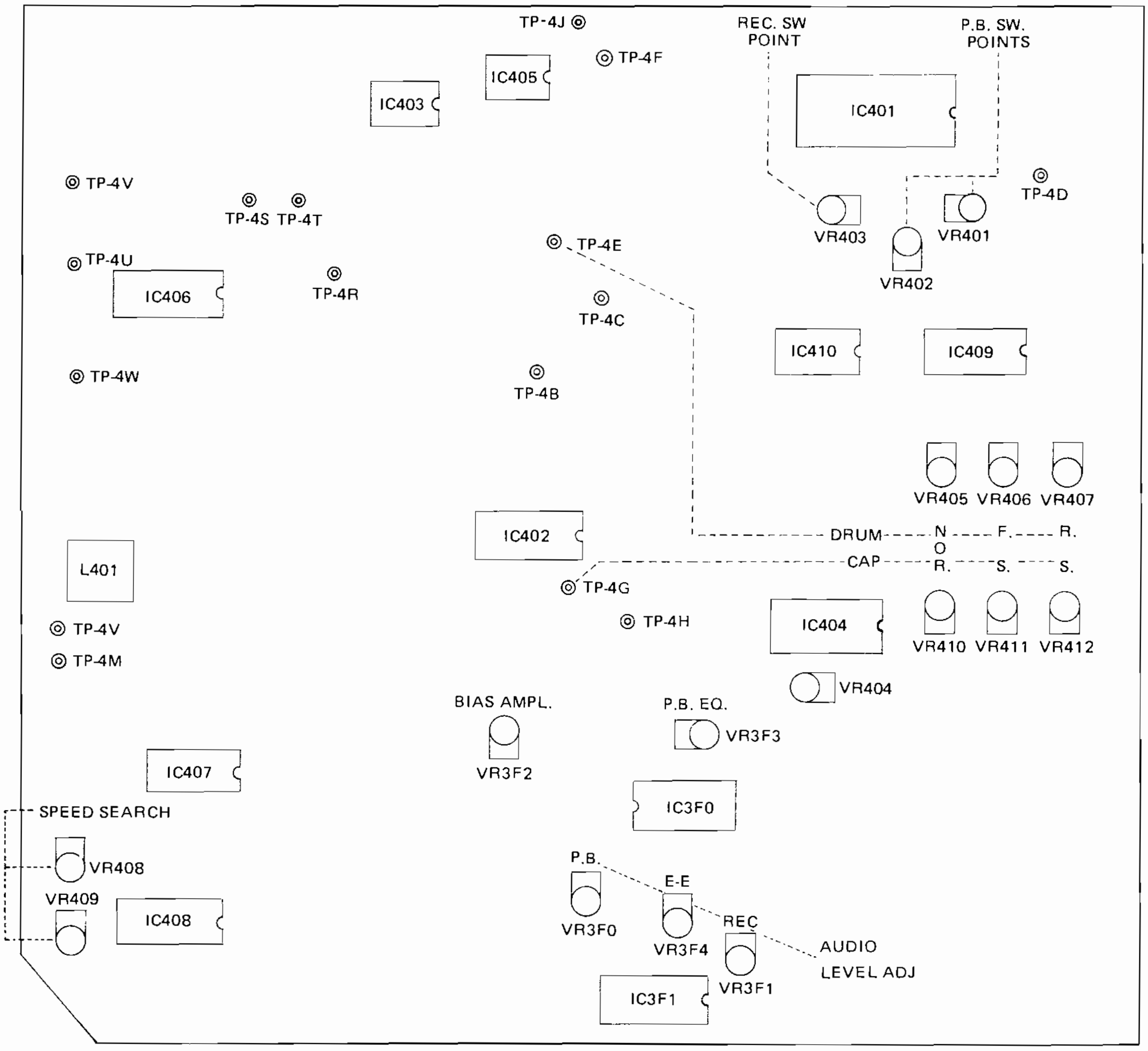
2-2-1 Supply motor voltage

1. Turn the power switch on.
2. Cover the end sensor with a small piece of black tape.
3. Close the cassette switch by hand.
4. Set the recorder to PLAY mode.
5. Move the tension arm to allow maximum light to fall on the tension sensor (Q572).
6. Adjust VR5A1 for 2.7V±0.2V across pins 1 and 2 of connector MP (positive at pin 2).
7. Move the tension arm to allow minimum light to fall on the tension sensor (Q572).
   Check for 0 ~ 0.2V across pins 1 and 2 of connector MP.

2-3 Servo Circuit Adjustment

These adjustments and confirmation must be made after completion of power supply and mechanism control adjustments.

P.C.B. AUDIO/SERVO


TP-4J
TP-4F
IC405
IC403
REC. SW POINT
P.B. SW. POINTS
IC401
TP-4D
VR403
VR401
VR402
TP-4V
TP-4S
TP-4T
TP-4E
TP-4U
IC406
TP-4R
TP-4C
IC410
IC409
TP-4W
TP-4B
VR405
VR406
VR407
IC402
DRUM
CAP
NOR.
F.S.
R.S.
L401
TP-4G
TP-4H
IC404
VR410
VR411
VR412
TP-4V
TP-4M
VR404
BIAS AMPL.
P.B. EQ.
VR3F3
VR3F2
IC407
IC3F0
SPEED SEARCH
VR408
VR409
IC408
P.B.
E-E
REC
VR3F0
VR3F4
VR3F1
AUDIO LEVEL ADJ
IC3F1

2-3-1 Drum Servo Adjustment

1. Connect a High Z meter (or scope) to TP-4E.
2. Select PLAY mode.
3. Adjust VR405 slowly to obtain a reading of 5.0V±0.1V.
4. Pressing the FS and RS buttons, adjust VR406 & VR407 respectively for a reading of 5.0V±0.1V.
5. Select STOP and allow all motors to come to a halt.
6. Re-start and check the specified voltages are re-obtained.

2-3-2 Capstan Servo Adjustment

1. Connect an Oscilloscope to TP-4G and select RECORD mode.
2. Adjust VR410 for a sampling voltage of 4.0V±0.2V. (Refer Fig. 2-1).
3. Select STOP mode, allow all motor to come to a halt.
4. Re-select RECORD mode & check the specified voltage is re-obtained.
5. Select PLAY mode.
6. Press the FS & RS buttons in turn, and adjust VR411 & VR412 respectively for a sampling voltage 4.0V± 0.2V.
7. Stop unit & re-start to check sample voltage.

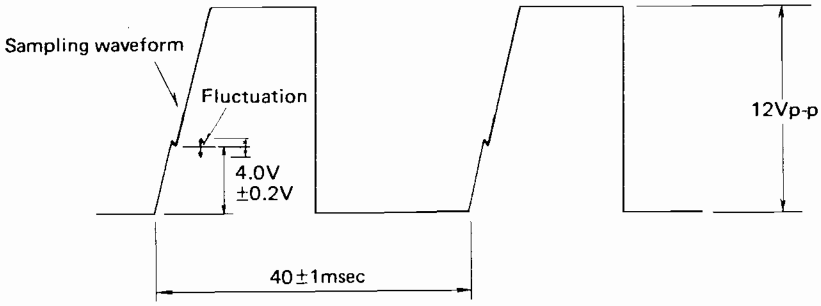


Fig. 2-1 Capstan Servo Trapezoidal wave

2-3-3 Playback Switching Point Adjustment

1. Play the stairstep section of the alignment tape.
2. Set the oscilloscope synchronizing switch to "EXT" and apply external sync from TP-4C.
3. Set the oscilloscope synchronizing slope to "–".
4. Connect the oscilloscope to the Video output socket, and adjust VR401 so that the trigger point is located at 6.5 ± 1H before the vertical synchronizing signal.

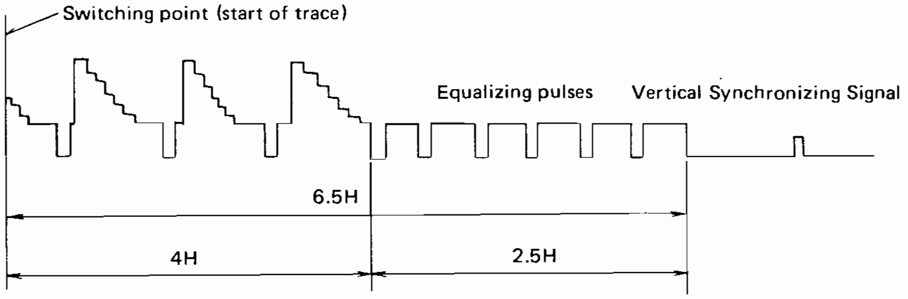

Switching point (start of trace)
Equalizing pulses
Vertical Synchronizing Signal
6.5H
4H
2.5H

Fig. 2-2 Switching Point

5. Set the oscilloscope synchronizing slope to "+".
6. Adjust VR405 so that the trigger point is located at 6.5 ± 1H before the vertical synchronizing signal.
7. Ascertain that the difference between CH1 and CH2 is less than 1H with a monitor TV.

2-3-4 Record Switching Point Adjustment

1. Set to record mode, using a T.V. broadcast signal.
2. Connect the oscilloscope as in Paragraph 2-3-3.
3. Adjust VR403 so that the trigger position is located at 6.5 ± 1H before the vertical synchronizing signal. (Refer to Fig. 2-2)

2-3-5 Tracking Preset Adjustment

1. Record colour bar signal and play back.
2. Set the tracking control VR4700 at the centre click position.
3. Connect dual-trace oscilloscope CH1 to TP-4D and CH2 to TP-4B respectively, and adjust VR404 so that TP-4D pulse coincides with the rise point of TP-4A slope. (Refer to Fig. 2-3)
4. Connect the oscilloscope to TP-2C of PCB-PRE/REC, and ascertain that the tracking becomes maximum at the centre click position of the tracking control VR4700.

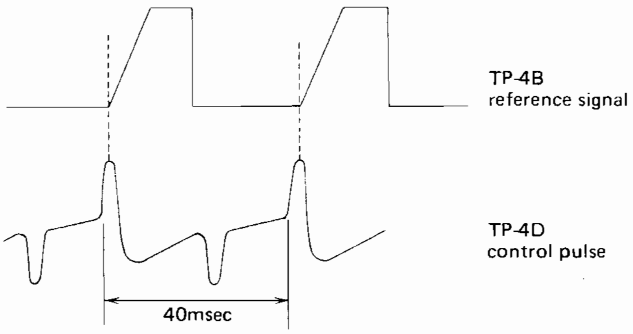


Fig. 2-3 Tracking Preset

2-4 PRE/REC Circuit Adjustment

2-4-1 Head resonance and head Q adjustments

[CH-1]

1. Insert the dummy cassette and place the recorder in the PLAY mode.
2. Connect an oscilloscope to TP-2C (FM OUT) on the PCB-Y/C.
3. Supply a sweep signal from a video sweep generator to TP-2M on the PCB-Y/C through the pad shown in Fig. 2-4.

[Note]

Adjust the level of the sweep generator to prevent the waveform displayed on the oscilloscope from being distorted.

4. Apply 1MHz and 4.6MHz markers.
5. Adjust VR203 (FM CH BALANCE) so that CH1 and CH2 waveform are overlapped together at 1MHz.

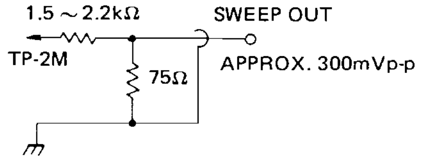


Fig. 2-4 Decoupling Pad

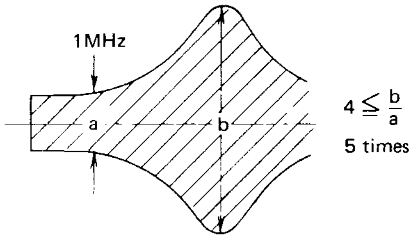


Fig. 2-5 Head Resonance and Head Q Waveform

6. Adjust VC202 (CH1 Resonance) and VC201 (CH2 Resonance) on the PCB-Y/C for maximum at 4.6MHz.
7. Adjust VR201 (CH1 Head Q) and VR202 (CH2 Head Q) on the PCB-Y/C so that the level ratio between 4.6MHz and 1MHz is 5.
8. If the ratio between CH-1 and CH-2 head Q cannot reach five, adjust to lower channel. Both responses must be equal each other with a gain more than 4.

2-4-2 FM channel balance

Refer to section 1.15 before attempting any adjustment.

1. Playback the colour bar section of an alignment tape.
2. Connect an oscilloscope to TP-2C (FM OUT) on PCB-Y/C.
3. Adjust VR203 (FM CH Balance) on PCB-Y/C so that the FM output of CH1 and CH2 are equal as shown in Fig. 2-6.

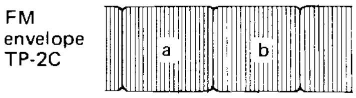


Fig. 2-6 Playback FM Output Waveform

2-4-3 Playback FM level adjustment

1. Playback the colour bar section of an alignment tape.
2. Connect an oscilloscope to TP-2L (FM IN) on PCB-Y/C and adjust VR2A2 for 0.5Vp-p signal on the oscilloscope.

2-4-4 FM record level adjustment

1. Apply a video signal (colour bar) to the unit and set it to RECORD mode.
2. Connect an oscilloscope to TP-2M on PCB-Y/C.
3. Adjust VR2A4 (FM REC Level) on PCB-Y/C so that the level of the horizontal sync signal is 4.0Vp-p as shown in Fig. 2-7.

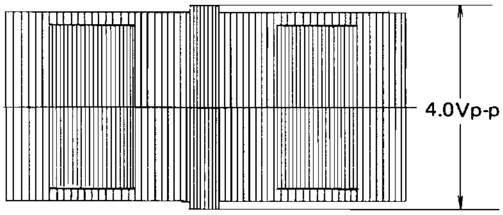
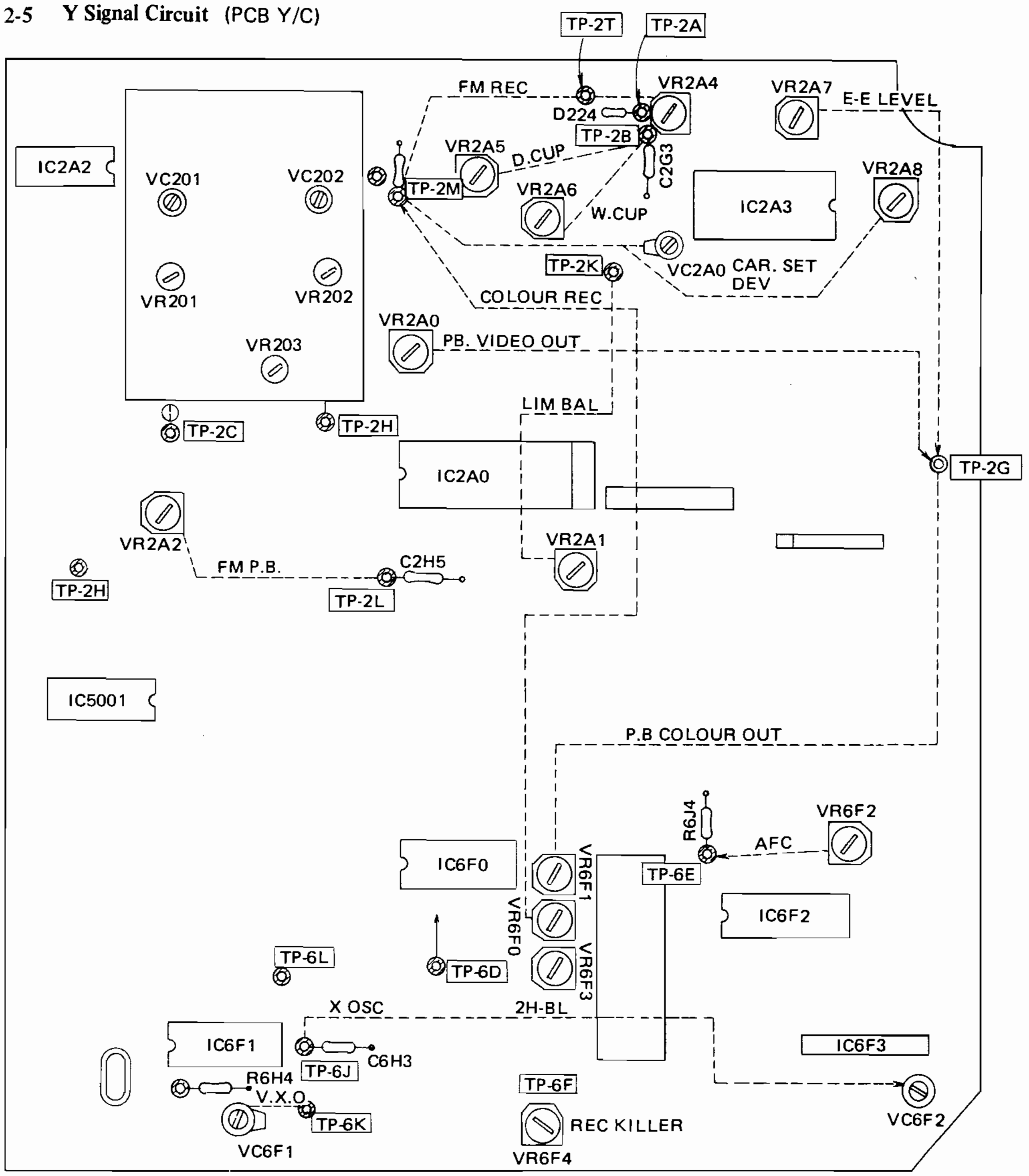


Fig. 2-7 Recording FM Waveform

2-4-5 Recording colour level adjustment

1. Apply a video signal (colour bar) to the unit and set it to RECORD mode.
2. Short circuit L203 on PCB-Y/C.
3. Connect an oscilloscope to TP-2M on PCB-Y/C.
4. Adjust VR6FO (COLOUR REC LEVEL) for a burst amplitude of 180mVp-p.

2-5 Y Signal Circuit (PCB Y/C)


TP-2T
TP-2A
FM REC
VR2A4
VR2A7
E-E LEVEL
D224
TP-2B
IC2A2
VC201
VC202
VR2A5
D.CUP
C2G3
TP-2M
VR2A6
W.CUP
IC2A3
VR2A8
VR201
VR202
TP-2K
VC2A0
CAR. SET
DEV
COLOUR REC
VR2A0
VR203
PB. VIDEO OUT
LIM BAL
TP-2C
TP-2H
IC2A0
TP-2G
VR2A2
VR2A1
FM P.B.
C2H5
TP-2H
TP-2L
IC5001
P.B COLOUR OUT
R6J4
VR6F2
AFC
IC6F0
VR6F1
TP-6E
IC6F2
VR6F0
TP-6L
TP-6D
VR6F3
X OSC
2H-BL
IC6F1
C6H3
IC6F3
R6H4
TP-6J
V.X.O
TP-6F
TP-6K
REC KILLER
VC6F2
VC6F1
VR6F4

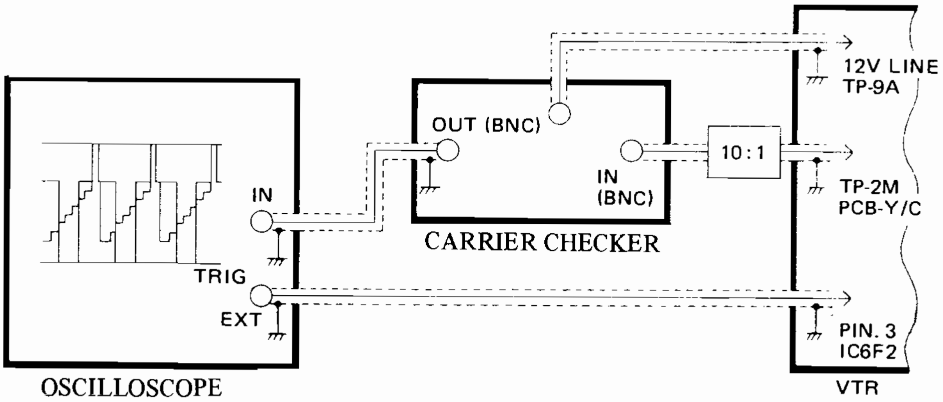
2-5-1 Carrier set, deviation adjustments

[Note]

This adjustment is to be made only when the playback waveform of the tape signal prerecorded by the same unit is compressed, or of extremely low S/N, when the carrier set and deviation adjustments have been shifted, or when any parts in the FM modulation circuit have been replaced.

Method (1)

(1) Connection



1. Connect the OUT terminal (BNC) of the carrier checker and the V input terminal of an oscilloscope by a coaxial cable (1 : 1).
2. Connect the probe of an oscilloscope to the IN terminal of the carrier checker, and connect the other end of the probe to TP-2M.
3. Connect the 12V terminal of the carrier checker to the 12V line stabilized DC power supply of the recorder.
4. Supply an external horizontal synchronizing signal (Pin number 3 of IC6F2 on PCB-Y/C) to the trigger terminal of the oscilloscope.
5. Set the sensitivity of the oscilloscope to 0.2V/Div and the sweep time to 20 μs.

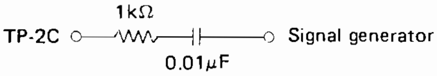
(2) Adjustment procedure

1. Supply a Video signal and set to REC mode.
2. Adjust SYNC TIP VC2A0 and WHITE PEAK VR2A8 alternately so that the response waveform 3.8MHz (sync tip) line and 4.8MHz (white peak) just touch the white lines on the oscilloscope.
3. Confirm that no tearing of the picture, etc. is observed.

Method (2)

(1) Connection

1. Connect a jumper between pin 6 of connector VG and pin 7 of connector VG on the Y/C board in order to keep the modulator and demodulation turned on at all times.
2. Connect a signal generator (sinewave) to TP-2C through a 1KΩ resistor and a 0.01μF capacitor.



(2) Adjustment Procedure

1. Prior to this adjustment, turn the WHITE CLIP ADJ (VR2A6) fully CW and DARK CLIP ADJ (VR2A5) fully clockwise.
2. Supply a stair-step signal to the video input on the rear panel.
3. Connect the scope to pin 23 of IC2A0 on the same board.
4. Set the frequency of signal generator to 3.8MHz ± 30KHz.
5. Insert the cassette tape and place the unit and set to RECORD mode.
6. Adjust the FM CARRIER SET ADJ (VC2A0) for minimum carrier at sync tips.
7. Change the frequency of the signal generator from 3.8MHz to 4.8MHz ± 30KHz.
8. Adjust the FM DEV ADJ (VR2A8) for minimum carrier at peak white.
9. Remove the jumpers.

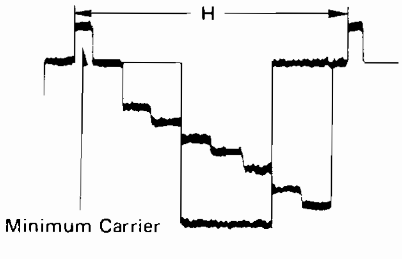


Fig. 2-9

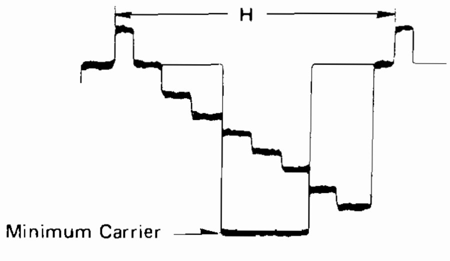


Fig. 2-10

Connect scope probe to (1V/div; 20μS/div.) TP-2G Place instrument in RECORD mode and make a recording.

Play back recorded tape.

Confirm that the Video Level is 1.9Vp-p±0.1V.

Make white and dark clip adjustment.

2-5-2 White clip and dark clip adjustments

1. Supply a video signal (colour bar) to the unit and set to RECORD mode.
2. Connect an oscilloscope to TP-2B (PRE EMPHA OUT) on the PCB-Y/C.
3. Adjust VR2A6 (White Clip) and VR2A5 (Dark Clip) on the PCB-Y/C so that the overshoot appearing at the white peak side and the under shoot at the sync tip side are 60% and 40% of the regular signal level, as shown in Fig. 2-11.
4. If carrier deviation is shifted after the adjustment, readjust item 2-5-1.

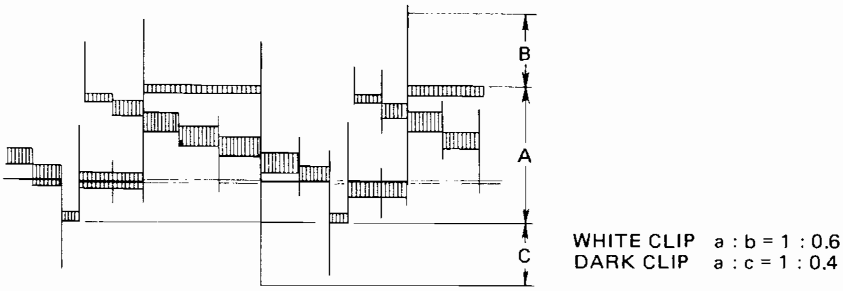


Fig. 2-11 Clipped Waveform

2-5-3 E-E output level adjustment

1. Supply a video signal (colour bar) to the recorder and set it to E-E mode.
2. Connect an oscilloscope to TP-2G (VIDEO OUT) on PCB-Y/C.
3. Adjust VR2A7 (EE level) on PCB-Y/C for 1.9Vp-p video signal on the scope.

2-5-4 Limiter Balance Adjustment

1. Play the colour bar section of the alignment tape (MH-2).
2. Connect the oscilloscope to TP-2K (DEMOD OUT) on PCB-Y/C.
3. Adjust VR2A1 (LIMITER BAL) on PCB-Y/C so that the double waveform coersides between SYNC TIP & WHITE PEAK as shown in Fig. 2-12.

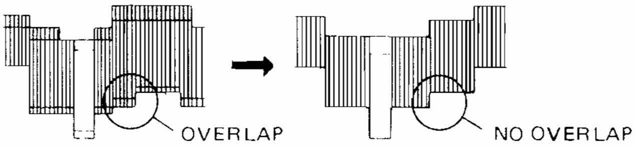


Fig. 2-12 DEMOD Output Waveform

2-5-5 Playback Video Output Adjustment

1. Play the colour bar section of the alignment tape (MH-2).
2. Connect the oscilloscope to TP-2G (VIDEO OUT) of Y/C printed circuit board.
3. Adjust VR2A0 (Y Level) of Y/C printed circuit board to obtain a video signal of $1.9^{+0.1}_{-0}$ Vp-p.

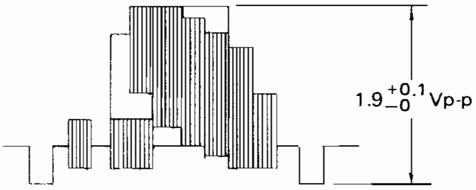


Fig. 2-13 Video Output Waveform

2-6 Chroma Signal Circuit

2-6-1 AFC Adjustment

1. Set the input selection switch to CAMERA.
2. Short circuit video in socket.
3. Connect an oscilloscope to TP-6E on PCB-Y/C and note the DC voltage.
4. Supply a video signal (color bar) and adjust VR6F2 (AFC ADJ) so that voltage now at TP-6E is equal to that noted with no signal.

2-6-2 4.435MHz VXO Adjustment

1. Set the input selection switch to CAMERA.
2. Short-circuit VIDEO-IN terminal and set to record mode.
3. Ground TP-6L through a 18KΩ resistor.
4. Connect a frequency counter to TP-6K through a probe of 10 : 1.
5. Adjust VC6F1 (VXO) so that the frequency of TP-6K is 4.435572MHz±50Hz.

2-6-3 4.433MHz X'tal OSC Adjustment

1. Play back the colour bar section of the alignment tape.
2. Connect a frequency counter to TP-6J (4.433MHz X'tal OSC OUT) on PCB-Y/C.
3. Adjust VC6F2 (4.433MHz OSC) so that the frequency of TP-6J is 4.433619MHz± 10Hz.

2-6-4 2H-DL FILTER adjustment

1. Play the colour bar section of the alignment tape.
2. While observing the screen of the TV adjust VR6F3 for minimum colour blinds.
   (Mal-adjust tracking for easier observation)

2-6-5 Playback colour output adjustment

1. Playback the colour bar signal of the alignment tape.
2. Connect an oscilloscope to TP-2G on PCB-Y/C.
3. Adjust VR6F1 (COLOUR OUT) for a burst level of 0.6Vp-p as shown in Fig. 2-14.

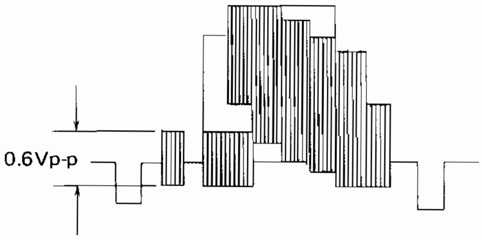


Fig. 2-14 Colour Output Waveform

2-6-6 Record colour killer adjustment

1. Apply a Video signal and set to REC mode.
2. Connect a DC voltmeter to TP-6F.
3. Adjust VR6F4 for a DC voltage of TP-6F of 3.5V.

2-7 Audio Circuit Adjustments

2-7-1 E-E Level Adjustment (0dB=0.775V r.m.s=2.2Vp-p)

1. Set the input selection switch to CAMERA and select RECORD mode.
2. Apply 1KHz −30dB to the AUDIO IN socket.
3. Connect an oscilloscope to the AUDIO OUTPUT socket.
4. Adjust VR3A3 (E-E-LEVEL) for −10dB output.

2-7-2 Audio Level Adjustment

1. Reproduce the colour bar section of an alignment tape. (1KHz audio reference signal)
2. Connect an oscilloscope to AUDIO OUT socket.
3. Confirm that VR3F3 (PB-EQ) is set at its centre.
4. Adjust VR3A0 (PB-LEVEL) for an output level of 2.2V (0dB).

   [Note]

   If the level fluctuates more than ±1dB, check mechanical adjustment.

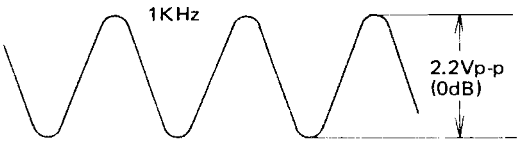


Fig. 2-15 Reproduced Audio Output

2-7-3 Bias Level Adjustment

1. Set the input selection switch to CAMERA.
2. Short-circuit AUDIO-IN socket, and set to Record mode.
3. Connect an AC voltmeter provided with the high-pass filter shown, across R375 on PCB-A/C, as illustrated in Fig. 2-16.

   [Note]

   The case of the voltmeter should not contact the Video Recorder is ground.
4. After making sure that the TV monitor, etc. are not influencing on the indication of the AC voltmeter, adjust VR3A4 (BIAS-LEVEL) for 1.2 mVr.m.s.

   [Caution]

   Never set to play mode with AC voltmeter connected, as damage may occur.

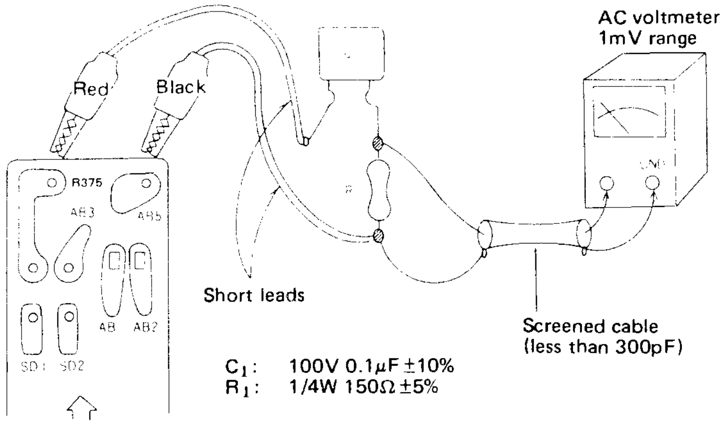


Fig. 2-16

2-7-4 Record Level Adjustment

1. Set the input selection switch to CAMERA.
2. In Audio dub mode, apply a signal of 1KHz −30dB to AUDIO-IN terminal, and a Video signal, such as colour bars to the VIDEO IN terminal. Record and play it back.
3. Monitoring the AUDIO-OUT terminal with an AC voltmeter, adjust VR3A2 (REC-LEVEL) during recording so that the meter indication is +10dB in playback.

   [Note]

   When the adjustment is made it is recommended that the level of REC AMP OUT is monitored at the junction of R3G0 and C3B5 to determine the amount to be added or subtracted to equalize to the level mentioned above.

2-7-5 Playback Equalizer Adjustment

1. Ascertain that no dirt exists on the audio head or no wrinkle is observed on the tape.
2. Supply 7KHz and 70Hz signals with a level of –30dB each to AUDIO- IN terminal and supply a video signal to VIDEO-IN terminal. Record and them playback.
3. Monitoring the AUDIO-OUT terminal with an AC voltmeter adjust VR3A1 (PB-EQ) so that the playback level of the 7KHz signal is –10dB.

2-8 Speed Search Circuit Adjustment

2-8-1
1. Set to SPEED SEARCH mode.
2. Connect an oscilloscope to TP-4M, and adjust VR408 for a duty cycle of 50% shown in Fig. 2-17. (In case the duty fails to be 50%, 50±10% is allowable.)

2-8-2
1. Set to the search mode.
2. Connect the oscilloscope to TP-4N and adjust VR409 for a duty cycle of 50% shown in Fig. 2-18. (If the duty cannot be 50%, 50±10% is allowable.)

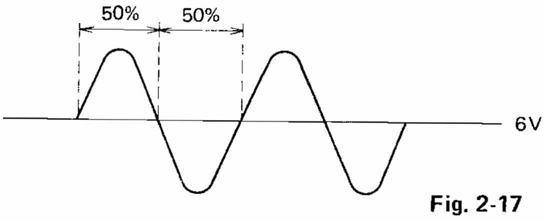


Fig. 2-17

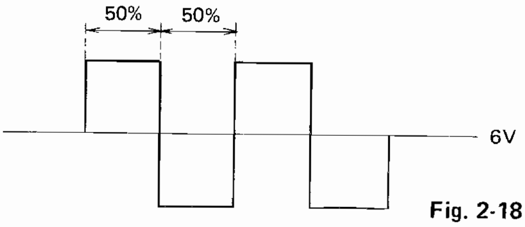
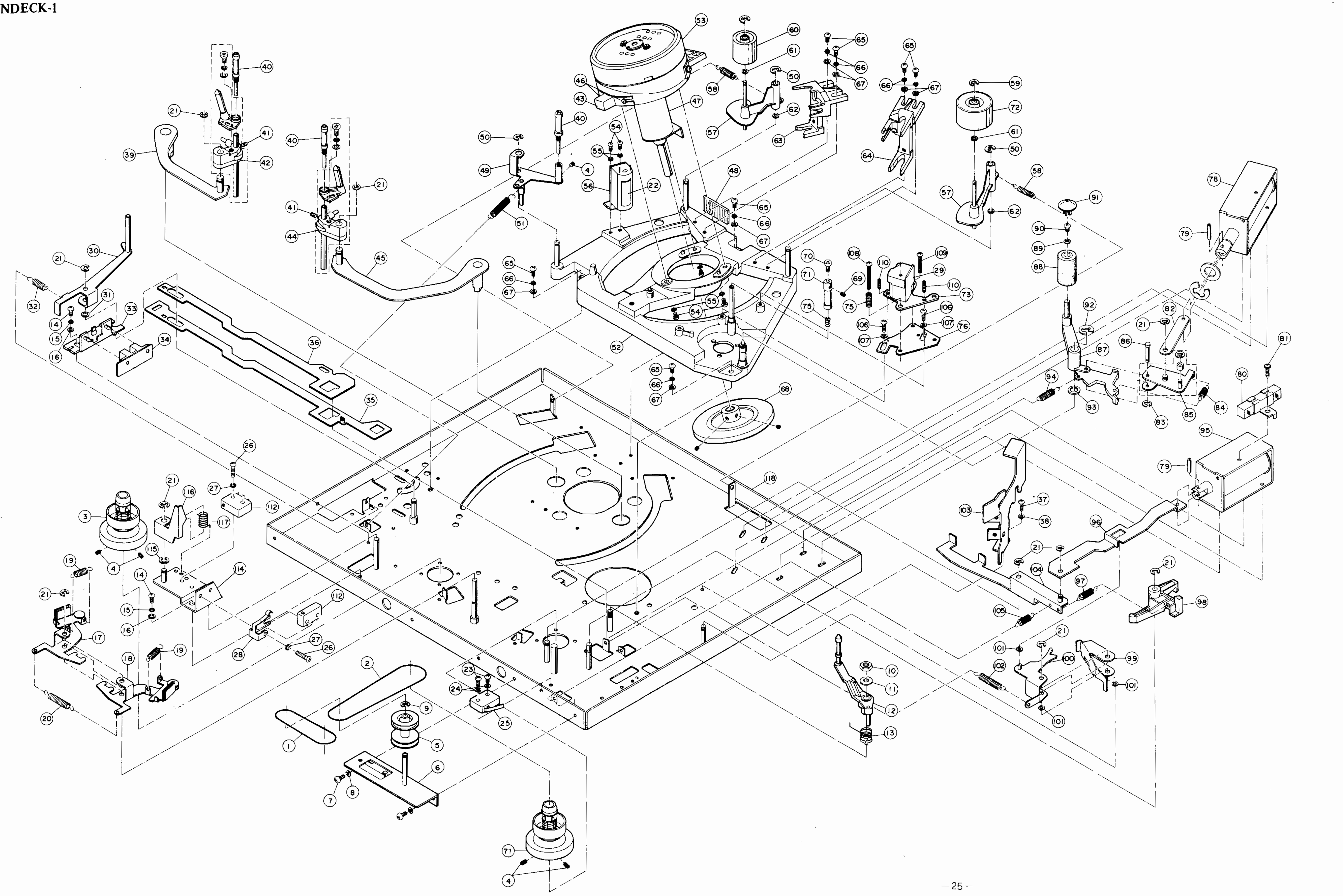


Fig. 2-18

ASSEMBLY
MAINDECK-1



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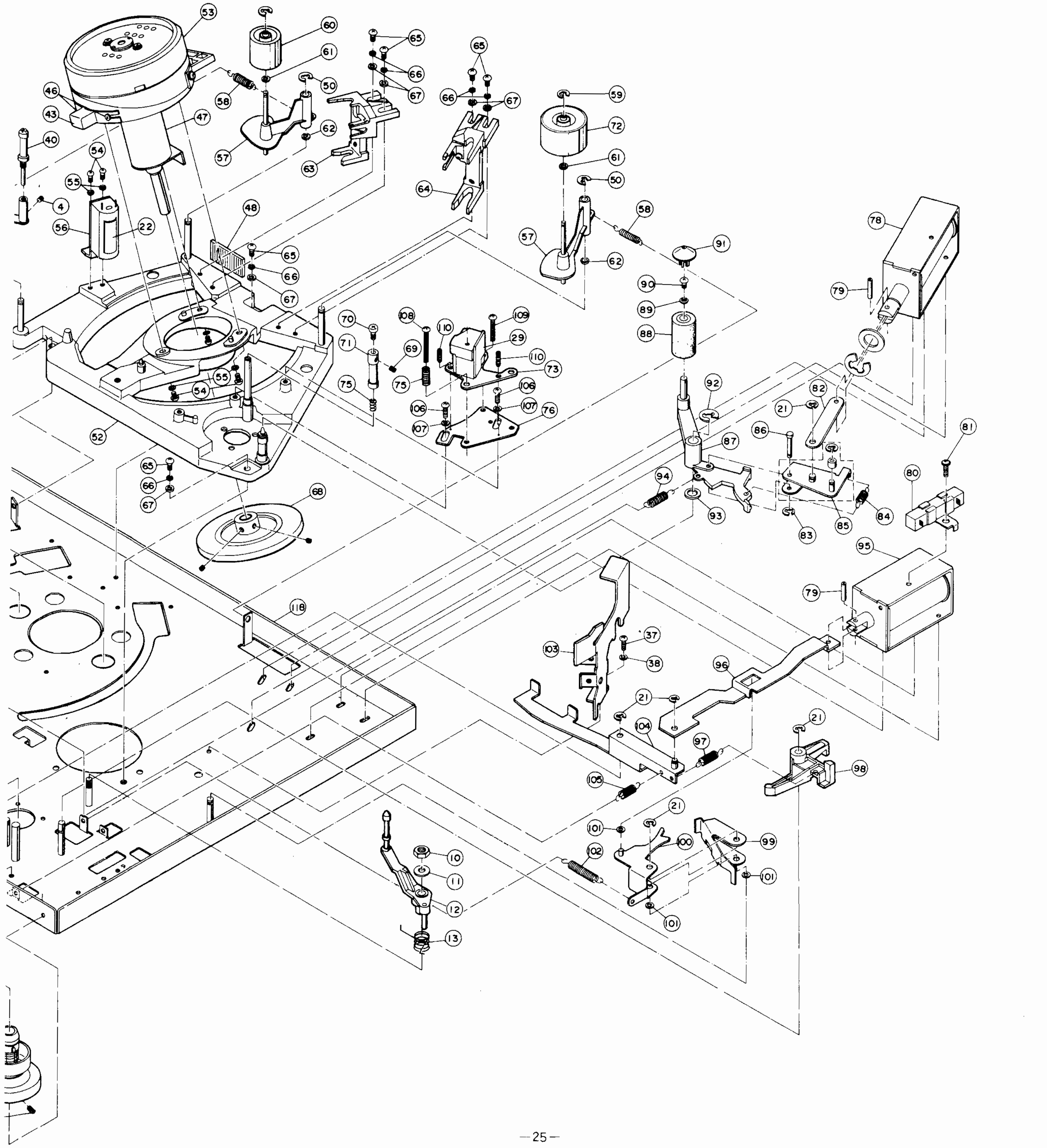
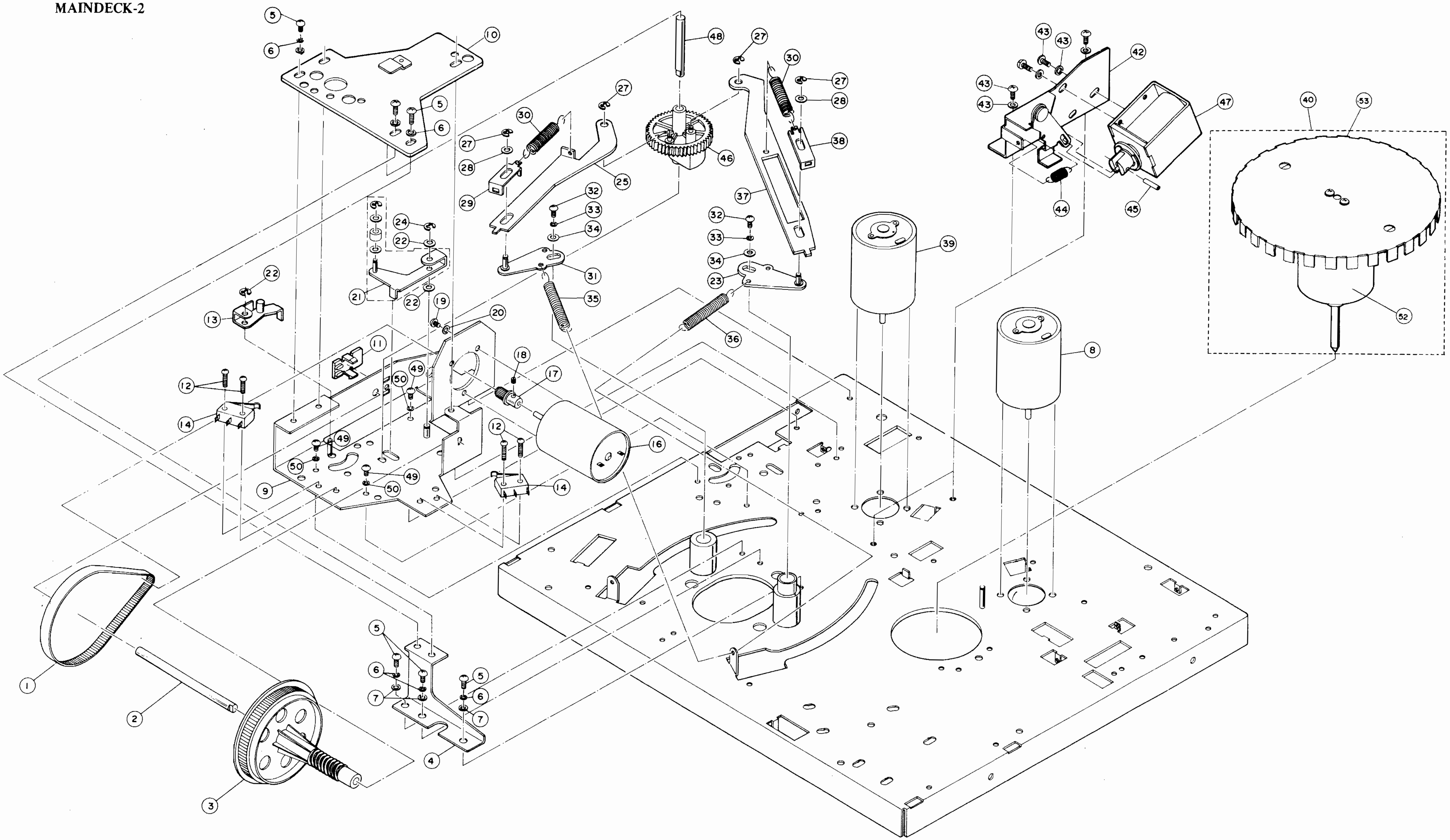


ITEM	PARTS NO.	PART NAME	DESCRIPTION
1	521D03202	Belt-C	Replacement Parts
2	521D03201	〃	〃
3	522C05301	Reel-Disk (SP)	〃
4	669D05904	Set-Screw M3 x 0.5 – 4	
5	522D13901	Pulley-Counter	
6	594D44201	Bracket-Pulley	
7	669D17101	Screw-Sems-M	M3X0.5X6
8	〃	〃	〃
9	685C00204	Retaining-Ring	2
10	674D08101	Nut-Nylon	M3X0.5
11	552C00408	Washer-Thrust	ϕ3.2-ϕ8-0.5
12	635B02001	Arm-Reverse	
13	570D61901	Spring-RS	
14	669D17101	Screw-Sems-W M3 x 0.5 – 6	15 , 16 Include
15	〃	〃	
16	〃	〃	
17	593D98601	Brake	
18	593D98602	〃	
19	570D51201		
20	570D51901	Spring	
21	685C00206	Retaining Ring③	
22	460P02401	Head-FE	Replacement Parts
23	669D20009	Screw Sems	M2.3X0.4X12
24	〃	〃	〃
25	436P00501	SW-Eject	
26	650P23100	Screw-F-FE-Pan	M2.3 x 10
27	680P22301	Washer-Spring	2.3
28	570D57801	Spring-SW	
29	240 C78602	PCB-A/C-Head	
30	525D08401	Arm-Tension	
31	552C00306	Washer-Thrust ϕ4 x 0.5	
32	570D51901	Spring	
33	641 C20301	Holder-T-Sens	
34	268P00901	Photo-Interrupter	Replacement Parts
35	594D51701	Lever-PH	
36	594D51801	Lever-RS	
37	669D17101	Screw-Sems-M	M3X0.5X6
38	〃	〃	〃
39	525D07301	Arm-TU-L	
40	522 C05402	Guide-Roller	
41	669D19701	Set-Screw-F	M3 x 0.5 – 3 F. Point
42	589 D02304	S-Tape-Guide	
43	265P05701	Posistor	Replacement Parts
44	589 D02204	T.U.-Tape-Guide	
45	525D07101	Arm-S-L	
46	669D19803	Screw-BS-Bind	M3 x 0.5 – 4
47	928 B00703	Assy-Lower-Drum	
48	299 P03502	Sensor-H	Replacement Parts
49	525D07901	Guide-Lever	
50	685C00207	Retaining-Ring	4
51	570D52601	Spring	
52	948C00602	Assy-Drum-Base	
53	928 B00803 928 B00804	Assy-Upper-Drum	
54	669D17302	Screw-Sems M3 x 0.5 – 8	55 Include
55	〃	〃	
56	593D93001	F.E. Bracket	
57	641 C21201	Arm-Imp-Roller	
58	570D56501	Spring-Imp-Arm	
59	685C00203	Retaining-Ring	1.5
60	641 D48801	S. Imp-Roller	
61	552C00302	Washer-Thrust	ϕ2 x 0.5
62	552C00308	〃	5
63	635C02901	Holder-Arm-Stp	
64	635C02902	〃	
65	669D20401	Screw-Sems-W M3 x 0.5 – 10	66 , 67 Include
66	〃	〃	
67	〃	〃	
68	524 D00701	Drum-Flywheel	
69	669D19702	Set Screw-F	M3 x 0.5 – 4
70	669D19802	Screw-BS-Bind	M3 x 0.5 – 8
71	630D64001	Guide-Pole	
72	641 D48901	TU. Imp-Roller	
73	460 P02301	Head-A/C	Replacement Parts
74	650P26100	Screw-F-FE-Pan	M2.6 x 10
75	570D59301	Spring-A/C	
76	594D36401	Base-Head-A/C	
77	522 C05301 522 C05302	Reel-Disk(T.U)	
78	299P02701	Solenoid	Replacement Parts
79	685D02102	Spring-Pin	3.2 x 10
80	109D02502	R-CEM-W	
81	669D17101	Screw-Sems-M	M3 x 0.5 – 6
82	593D93401	Plate-Pinch-Sol.	
83	685C00205	Retaining-Ring	2.5
84	570D52201	Spring	
85	525D07601	Lever-Lock	
86	630D66001	Pin-Lever-Lock	
87	525 D07502	Lever-Pinch	
88	522C05501	Pinch-Roller	Replacement Parts
89	552C00309	Washer-Thrust	ϕ6 x 0.5
90	669D20001	Screw-Sems	M2.6 x 0.45 – 4
91	641D42801	Cap-Roller	
92	685C00208	Retainning-Ring	5
93	552 C00309	Washer-Thrust	ϕ6 x 0.5
94	570D52101	Spring	
95	299P02801	Solenoid	Replacement Parts
96	593D93301	Plate-Lock-Sol.	
97	570D52501	Spring	
98	525C02201	Lever-SW	
99	591 C75801	Lever-Pause	
100	525D08101	Arm-Lock	
101	552C00306	Washer-Thrust	ϕ4 x 0.5
102	570D52301	Spring	
103	928 C05102	Assy-PWB-Tape-Sens	
104	525D07701	Brake-Off-Lever	
105	570D52001	Spring	
106	669D17102	Screw-Sems-W	M3X0.8–8
107	〃	〃	〃
108	650P26200	Screw-F-FE-PAN	M2.6X20
109	650P26100	〃	M2.6X10
110	669D20209	Set-Screw	M3X0.5–8
112	436P00208	SW-Micro	Replacement Parts
114	591C61801	Bracket-SW	
115	552C00306	Washer-Thrust	ϕ4 x 0.5
116	594D25001	Lever-SW	
117	570D57701	Spring	
118	591 C69703	Assy-Plate-Deck	
119	630D61901	Shaft	

ASSEMBLY
MAINDECK-2



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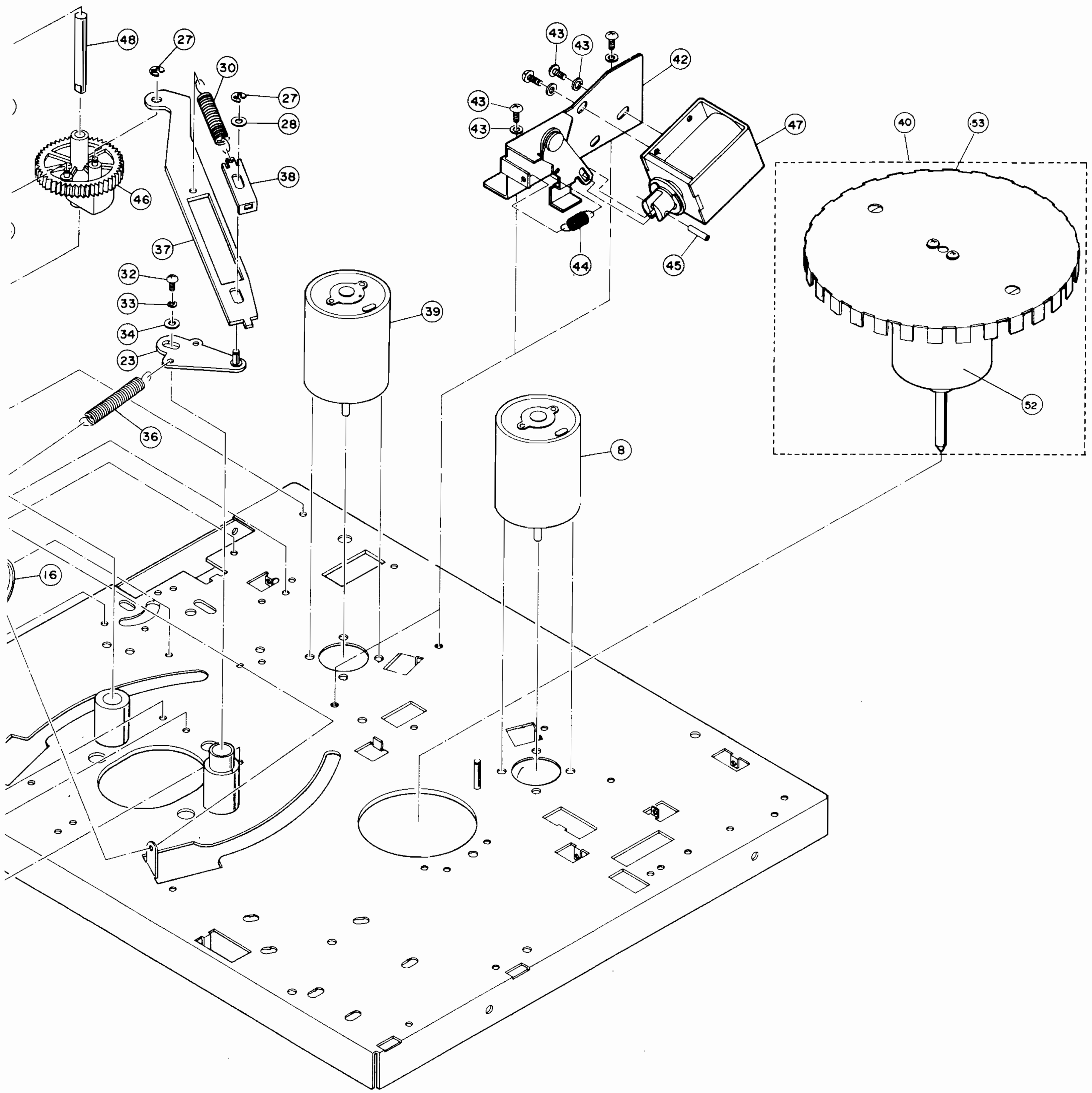
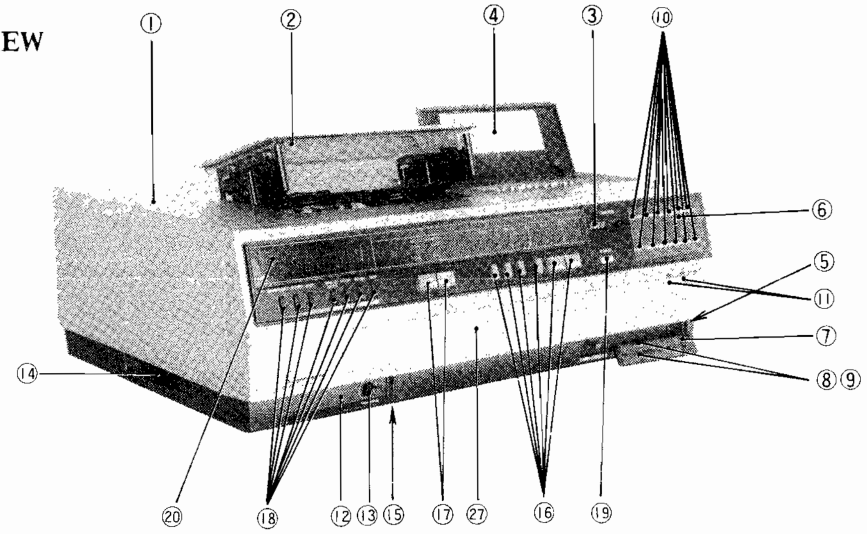


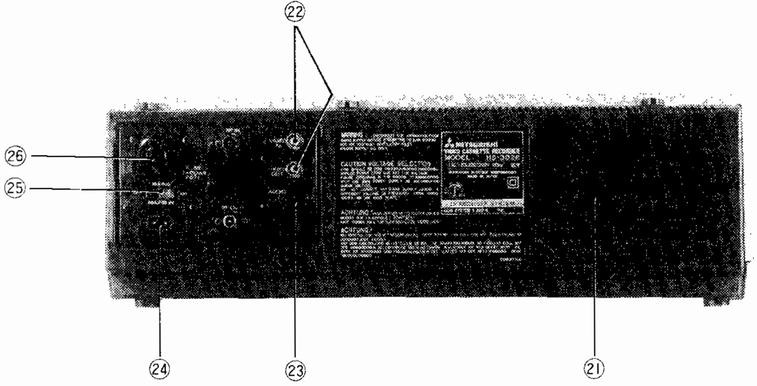
ITEM	PARTS NO.	PART NAME	DESCRIPTION	ITEM	PARTS NO.	PART NAME	DESCRIPTION
1	521C00601	Belt-NS	Replacement Parts				
2	630D64301	Shaft-W-P					
3	522C05201	Worm-Pulley					
4	594D00601	Pillar-W-B					
5	669D17101	Screw-Sems-W M3 x 0.5 – 6	Include 6 , 7				
6	"	"					
7	"	"					
8	288 P03201 288 P02804	Motor DM-4904M2	Replacement Parts				
9	590 B61602	Bracket-Worm					
10	591 C06806	Plate-W-B					
11	641D49001	Stopper-Shaft					
12	669 D20009	Screw-SEMS	M2.3 x 0.4 x 12				
13	594D51601	ARM-CAM-RS	2.3				
14	436P00209	SW-Micro	Replacement Parts				
16	288P02901	Motor M Y-15B2A	Replacement Parts				
17	522D12301	Pulley-M					
18	669D05904	Set-Screw	M3 – 0.5 x 4				
19	669D17101	Screw-Sems-W M3 x 0.5 x 6	Include 20				
20	"	"					
21	525 D06601	Arm-Cam-C-L					
22	552C00304	Washer-Thrust	φ3 x 0.5				
23	525D08202	Arm-L					
24	685C00204	Retaining-Ring	φ2				
25	591 C68302	Rod-T-U					
26	683D10001	Washer					
27	685C00206	Retaining-Ring	φ3				
28	683D10001	Washer					
29	593D95701	Hanger-T-U					
30	570D52701	Spring					
31	525D08201	Arm-L					
32	669D17104	Screw-Sems M4 x 0.7 – 6	Include 33 , 34				
33	"	"					
34	"	"					
35	570D53001	Spring					
36	570D52401	"					
37	591 C68301	Rod-S					
38	593D95801	Hanger-S					
39	288 P02805	Motor DM-4915M1	Replacement Parts				
40	928 B05003	Assy-Cap-Motor					
41	593D96101	Holder-MC					
42	594D41301	Braket-Sol					
43	669D17101	Screw-Sems-W	M3X0.5X6				
44	570D59901	Spring-EJ					
45	685D02101	Spring-Pin	3.2X10				
46	520C01001	Wheel-Loading					
47	299P03701	Solenoid					
48	630D64501	Shaft-W-L	φ6				
49	669D17308	Screw-Sems	Include 50				
50	"	"					
52	288 P02702	Motor-CP					
53	948 C05702	Assy-Flywheel-CP					

PARTS LIST

1. FRONT VIEW

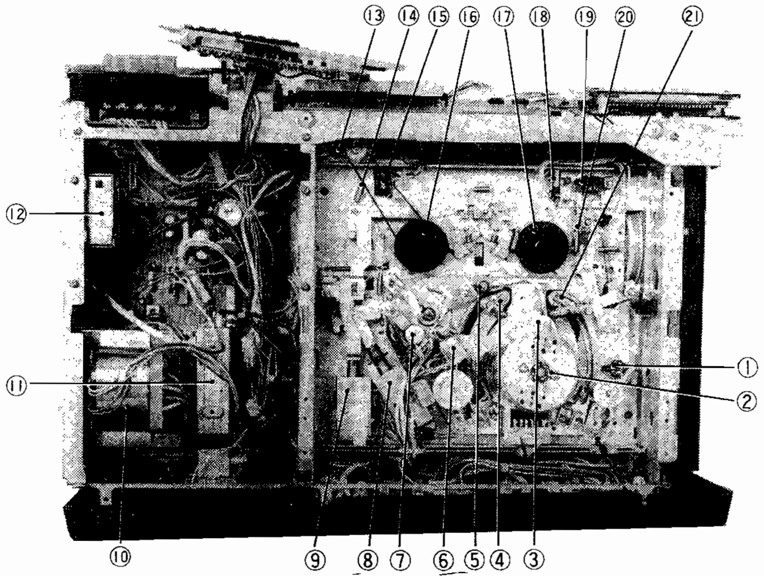


2. REAR VIEW

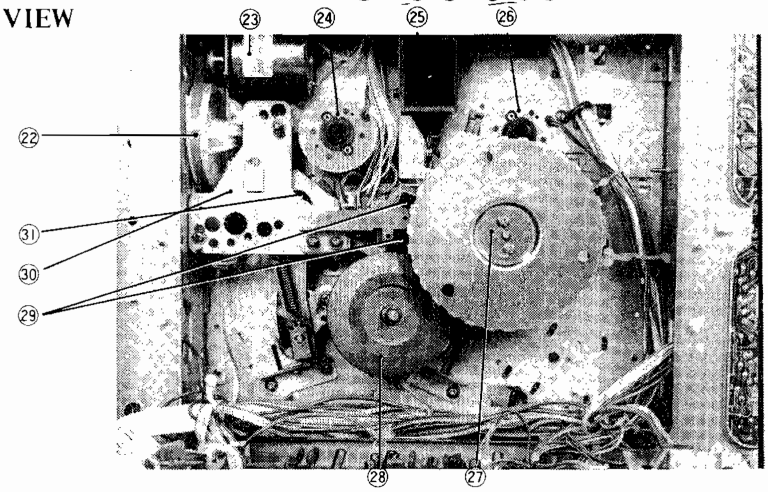


ITEM	PARTS NO.	PARTS NAME	DESCRIPTION	ITEM	PARTS NO.	PARTS NAME	DESCRIPTION
1	701 B03306	UNIT-TOP COVER		15	590A11001	PANEL-BOTTOM	
2	702 B30404	HOUSING-CASSETTE COVER		16	704 C22501	BUTTON-OPE-B	REW,FF, PAUSE, REC, PLAY, STOP
3	702 C33701	COVER-COUNTER		17	704 C22401	BUTTON-OPE-A	SPEED SEARCH (REW, FWD)
4	702 D13502	DOOR-TOP		18	704 C22601	BUTTON-TIMER	
5	761 B05901	UNDER-GUARD-R		19	704 D80001	BUTTON-EJECT	
6	761 D29501	PLATE-IND-CH		20	761 C16101	COVER-TIMER	
7	761 D29601	CASE-CH-NO		21	700 B07301	UNIT-BACK	
8	760 D26503	TAPE-DIAL	1 2 3 4 5 6	22	452D10601	CONNECTOR-BNC	VIDEO IN VIDEO OUT
9	760 D26504	〃	7 8 9 10 11 12	23	449 D02302	SOCKET-DIN-5P	AUDIO
10	704 D79901	BUTTON-CH-SW		24	451 C03201	POWER-JACK-CEE	
11	704 D78201	KNOB-PUSH-P	POWER, PROG REC	25	433 C01702	SW-SEESAW	
12	712 B07705	INLAY-VR		26	459 P00105	VOLTAGE-SELECTOR	
13	704 D77301	KNOB-TRACKING		27	701 A18806	UNIT-FRONT	
14	761 B06001	UNDER-GUARD-L					

3. TOP VIEW



4. BOTTOM VIEW



ITEM	SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIP-TION
1	T371	460 P02401	F.E. Head	
☆ 2		928 B00804 928 B00803	Upper Drum	
3	RP970	265 P05701	Posistor	TPH-499
4		948 C01804	Assy T.U.-Tape-Guide	
5	PL570	253 P02201	Cassette Lamp	BQ063-30203A
6	T370	460 P02301	A/C Head	
7		522 C05501	Pinch-Roller	
8	L571	299 P02701	Pinch-Solenoid	
9	L570	299 P02801	Lock-Solenoid	
10	T971	350 P18003	Power-Trans	
11	TU01	295 P21203	Tuner-TV	
12		295 P96801	RF-Converter	
13		521 D03202	Counter-Belt	
14		521 D03201	Counter Belt	
15	S574	436 P00501	SW-Eject	SS-5GL111-4

ITEM	SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIP-TION
☆ 16		522 C05301 522 C05302	Reel Disk (T.U)	
17		522 C05301	Reel Disk (S.P)	
18	S570	436 P00208	Sw-Cassette	SS-5-4
19	S571	〃	Sw-Error	Rec Protector
20	Q572	268 P00901	Photo-Interrupter	QN1122
21		948 C01803	Assy S-Tape-Guide	
22		521 C00601	Loading Belt	
23	M572	288 P02901	Loading Motor	MY-1582A
24	M571	288 P02805	S. Motor	DM-4915M1
25	L572	299 P03701	Eject-Solenoid	
☆ 26	M570	288 P03201 288 P02804	T.U. Motor	
27	M471	928 B05003	Assy-Capstan Motor	
28	T470	460 P02501	Pick Up Head	
29		268 P00901	Photo-interrupter	QN1122
30	S572	436 P00209	Sw. After Loading	SS-5GL13-4
31	S573	〃	Sw. UN. Loading	〃

5. ELECTRICAL PARTS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
INTEGRATED CIRCUITS			
IC71	266 P01001	MPC574J-AB	
IC101	266 P10601	IC-M5186P	
IC201	266 P76702	AN6320N	
IC2A0	266 P79601	AN6332	
IC2A2	263 P01102	TC4011BP/ MC14011BC	
IC2A3	266 P79301	AN6310	
IC3A0	266 P32302	M5144P	
IC3F0	266 P33201	AN262	
IC3F1	263 P06602	TC4066BP/ MC14066BCP	
IC401	266 P76101	AN6340	
IC402	266 P76202	AN6341N	
IC403	266 P72505	UPC1458C/ MC1458	
IC404	263 P01809	TC4018BP/ MC14018BCP	
IC405	266 P74401	TL082CP	
IC406	266 P72704	UPC339C/ LM339CN	
IC407	263 P01302	TC4013BP/ MC14013BCP	
IC408	263 P04902	TC4049BP	
IC409	263 P52002	TC4520BP/ MC14520BCP	
IC410	263 P06602	TC4066BP/ MC14066BCP	
IC5A0	266 P97501	TMS1300-2143	
IC5A1	263 P06602	TC4066BP/ MC14066BCP	
IC5A2	"	"	
IC5001	263 P01102	TC4011BP/ MC14011BC	
IC5004	266 P97701	M50122P	
IC6F0	266 P79701	AN6360	
IC6F1	266 P99501	AN6371	
IC6F2	266 P79901	AN6362	
IC6F3	266 P80001	AN6342N	
IC6F4	266 P62101	MPC741C	
IC8F0	266 P96901	TMS-1070-2811	
TRANSISTORS			
Q71	260 P16604	2SA673-D	
Q72	260 P17704	2SC711A-F,G	
Q74	260 P07704	2SC712-D	
Q102	260 P41904	2SC2724-C, D	
Q103	260 P25601	2SA1115-E, F	
Q131	260 P17102	2SC-710-CD/ 2SC2724-C	
Q201	260 P17102	2SC-710-CD/ 2SC2724-C	
Q202	"	"	
Q203	"	"	
Q204	260 P16603	2SA673-C	
Q205	260 P28103	2SC1213-C/ 2SC2274-E	
Q206	260 P10505	2SC535-A,B,C	
Q2A0	260 P16503	2SA628-E/ 2SA1115-E	
Q2A1	260 P17102	2SC710-CD/ 2SC2724-C	
Q2A2	"	"	
Q2A3	260 P10505	2SC535-A,B,C	
Q2A7	260 P16503	2SA628-E/ 2SA1115-E	
Q2A8	"	"	
Q2A9	260 P28103	2SC-1213-C	
Q2B0	260 P16604	2SA673-D/ 2SA950-Y	
Q2B6	260 P36001	2SA628A-E,F / 2SA1115-E	
Q3F3	260 P28103	2SC1213-C	
Q3F4	"	"	
Q3F5	260 P33804	2SC2603-E,F	
Q401	260 P25601	2SA1115-E,F	
Q402	260 P33804	2SC2603-E, F	
Q403	"	"	
Q404	"	"	
Q405	"	"	
Q406	260 P25601	2SA1115-E,F	
Q407	260 P33804	2SC2603-E,F	
Q408	"	"	
Q409	"	"	
Q410	260 P40401	2SB647-C	
Q411	260 P42701	2SC1826-O,Y	
Q412	"	"	
Q413	260 P33804	2SC2603-E,F	
Q414	260 P24701	2SC1162-C	
Q415	260 P33804	2SC2603-E,F	
Q416	260 P24701	2SC1162-C	
Q417	260 P33804	2SC2603-E,F	
Q418	260 P22801	2SC1096-LM	
Q419	260 P33804	2SC2603-E,F	
Q420	"	"	
Q421	"	"	
Q422	"	"	
Q423	"	"	
Q424	"	"	
Q425	260 P24701	2SC1162-C	
Q426	"	"	
Q427	"	"	
Q428	260 P25601	2SA1115-E,F	
Q429	"	"	
Q430	"	"	
Q431	"	"	
Q432	"	"	
Q433	"	"	
Q434	260 P17901	2SA715-C	
Q435	"	"	
Q436	"	"	
Q437	260 P33804	2SC2603-E,F	
Q438	260 P25601	2SA1115-E,F	
Q439	260 P33804	2SC2603-E,F	
Q441	260 P25601	2SA1115-E,F	
Q442	"	"	
Q443	"	"	
Q444	260 P33804	2SC2603-E,F	
Q445	"	"	
Q446	260 P25601	2SA1115-E,F	
Q447	"	"	
Q448	260 P33804	2SC2603-E,F	
Q449	"	"	
Q450	"	"	

TRANSISTORS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
Q451	260 P33804	2SC2603-E,F	
Q452	260 P25601	2SA1115-E,F	
Q453	〃	〃	
Q454	〃	〃	
Q501	260 P25604	2SA1115-F	
Q502	〃	〃	
Q570	260 P45101	TR PHOTO	PN202S
Q571	〃	〃	〃
Q572	268 P00901	PHOTO-INTER-RUPTER	ON1122
Q5A0	260 P33804	2SC2603-E,F	
Q5A1	〃	〃	
Q5A2	260 P19901	2SD667C	
Q5A3	260 P40401	2SB647-C	
Q5A4	〃	〃	
Q5A5	260 P19901	2SD667-C	
Q5A6	260 P33804	2SC2603-E,F	
Q5A7	〃	〃	
Q5A8	260 P25604	2SA1115-F	
Q5A9	260 P33806	2SC2603-F,G	
Q5C0	260 P33803	2SC2603-F	
Q5C1	260 P33806	2SC2603-F,G	
Q5C2	260 P25604	2SA1115-F	
Q5C3	260 P25604	2SA1115-F	
Q5C5	260 P28104	2SC1213-D	
Q5C6	260 P39201	2SC1983	
Q5C7	260 P33804	2SC2603-E,F	
Q5C8	260 P42701	2SC1826-O,Y	
Q5C9	260 P39201	2SC1983	
Q5D0	260 P38701	2SC2236-O,Y	
Q5D1	260 P16604	2SA673-D/ 2SA950-Y	
Q5D2	260 P33804	2SC2603-E,F	
Q5D3	〃	〃	
Q5D4	〃	〃	
Q5D5	〃	〃	
Q5D6	〃	〃	
Q5D7	〃	〃	
Q5D8	260 P39201	2SC1983	
Q5D9	260 P25604	2SA1115-F	
Q5E0	260 P25604	2SA1115-F	
Q5E1	〃	〃	
Q5E2	〃	〃	
Q5T5	260 P17706	2SC711A-E,F	
Q5T6	260 P45101	TR-PHOTO	PN202-S
Q5001	260 P17706	2SC711A-E,F	
Q5002	〃	〃	
Q5003	260 P36001	2SA628A-E,F	
Q5004	260 P17704	2SC711A-F,G	
Q5005	260 P17102	2SC710-C,D	
Q5006	260 P17704	2SC711A-F,G	
Q5200	260 P33806	2SC2603-F,G	
Q5201	〃	〃	
Q6F0	260 P17102	2SC710-CD	
Q6F2	260 P16503	2SA628-E	
Q6F3	260 P17703	2SC710A-G	
Q6F4	〃	〃	
Q6F6	260 P17102	2SC710-CD	
Q6F7	〃	〃	
Q6F8	260 P17706	2SC711A-E,F	
Q6G0	〃	〃	
Q71	260 P16604	2SA673-D	
Q7E1	260 P36001	2SA628A-E,F	
Q7E2	260 P17703	2SC711A-G	
Q7E3	〃	〃	
Q8F0	260 P33806	2SC2603-F,G	
Q8F1	260 P25601	2SA1115-E,F	
Q8F2	260 P33804	2SC2603-E,F	
Q8F3	260 P25601	2SA1115-E,F	
Q8F4	〃	〃	
Q8F5	260 P33804	2SC2603-F,G	
Q902	260 P33806	2SC2603-F,G	
Q903	〃	〃	
Q904	260 P35101	2SC1514 (VC)	
Q905	260 P35301	2SC1515K	
Q906	260 P40401	2SB647-C	
Q907	260 P39201	2SC1983	
Q909	260 P40401	2SB647-C	
Q971	260 P39201	2SC1983	

DIODES & OTHERS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
D77	264 P04502	1S2076A	
D101	264 P04501	1S2076	
D102	〃	〃	
D201	〃	〃	
D2A0	〃	〃	
D2A1	〃	〃	
D2A2	〃	〃	
D2A3	〃	〃	
D2A4	〃	〃	
D2B0	264 P12301	1SS16	
D2B1	〃	〃	
D3F2	264 P04501	1S2076/1S2472	
D3F3	〃	〃	
D3F4	〃	〃	
D401	264 P04501	1S2076/1S2472	
D402	〃	〃	
D403	〃	〃	
D404	〃	〃	
D405	〃	〃	
D406	〃	〃	
D407	〃	〃	
D408	〃	〃	
D409	〃	〃	
D410	〃	〃	
D411	〃	〃	
D412	〃	〃	
D413	〃	〃	
D414	〃	〃	
D415	〃	〃	
D416	〃	〃	
D417	〃	〃	
D418	264 P10102	RM-1Z (V)	
D419	〃	〃	
D420	264 P04501	1S2076	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
DIODES & OTHERS			
D421	264 P04501	1S2076	
D422	"	"	
D423	"	"	
D424	"	"	
D425	"	"	
D426	"	"	
D427	"	"	
D428	"	"	
D429	"	"	
D430	"	"	
D431	"	"	
D432	"	"	
D433	"	"	
D434	"	"	
D435	"	"	
D436	"	"	
D437	"	"	
D438	"	"	
D439	"	"	
D440	"	"	
D441	"	"	
D442	"	"	
D443	"	"	
D444	"	"	
D445	"	"	
D446	"	"	
D447	"	"	
D449	"	"	
D450	"	"	
D451	"	"	
D452	"	"	
D453	"	"	
D454	"	"	
D455	"	"	
D456	"	"	
D457	"	"	
D501	264 P21301	LN21RP-HL	
D502	"	"	
D503	"	"	
D504	"	"	
D505	"	"	
D506	"	"	
D508	264 P04501	1S2076	
D509	"	"	
D510	"	"	
D511	"	"	
D512	"	"	
D513	"	"	
D514	"	"	
D515	"	"	
D516	"	"	
D517	"	"	
D518	"	"	
D519	"	"	
D5A0	264 P04501	1S2076/1S2472	
D5A1	"	"	
D5A2	"	"	
D5A3	"	"	
D5A4	"	"	
D5A5	"	"	
D5A7	"	"	
D5A8	"	"	
D5A9	"	"	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
D5C0	264 P04501	1S2076/1S2472	
D5C1	"	"	
D5C3	"	"	
D5C4	"	"	
D5C6	"	"	
D5C7	"	"	
D5C8	"	"	
D5D0	264 P10102	RM-1Z	
D5D1	264 P04501	1S2076/1S2472	
D5D2	264 P09305	HZ-11C	
D5D3	264 P04501	1S2076/1S2472	
D5D4	"	"	
D5D5	"	"	
D5D6	"	"	
D5D7	"	"	
D5D8	"	"	
D5D9	"	"	
D5E0	264 P04501	1S2076/1S2472	
D5E1	"	"	
D5E2	"	"	
D5E3	"	"	
D5E4	"	"	
D5E5	"	"	
D5E6	"	"	
D5E7	"	"	
D5E8	264 P10102	RM-1Z	
D5E9	264 P04501	1S2076/1S2472	
D5F0	264 P04501	1S2076/1S2472	
D5F1	"	"	
D5F2	"	"	
D5F4	"	"	
D5F5	"	"	
D5F6	"	"	
D5F7	"	"	
D5F9	264 P10301	EQA01-06	
D5G0	264 P04501	1S2076/1S2472	
D5G1	"	"	
D5G2	"	"	
D5G3	"	"	
D5G4	"	"	
D5G5	"	"	
D5T5	264 P23701	TLR-123	
D5001	264 P04501	1S2076/1S2472	
D5002	"	"	
D5003	"	"	
D5004	264 P22102	MZ308B	
D5005	264 P04501	1S2076/1S2472	
D5006	"	"	
D5200	264 P21301	LN21 RP-HL	
D5201	"	"	
D5202	"	"	
D6F0	764 P04501	1S2076/1S2472	
D6F2	"	"	
D6F3	"	"	
D6F7	"	"	
D6F8	"	"	
D6F9	"	"	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
DIODES & OTHERS			
D6G0	264 P04501	1S2076/1S2472	
D6G1	〃	〃	
D6G2	〃	〃	
D6G3	〃	〃	
D6G4	〃	〃	
D6G5	〃	〃	
D7A1	264 P04502	1S2076A	
D7A2	〃	〃	
D7A3	〃	〃	
D7A4	〃	〃	
D7A5	〃	〃	
D7A6	〃	〃	
D7A7	〃	〃	
D7A8	〃	〃	
D7A9	〃	〃	
D7B1	〃	〃	
D7B2	〃	〃	
D7B3	〃	〃	
D7E5	〃	〃	
D7F1	〃	〃	
D7F2	〃	〃	
D7F3	〃	〃	
D7F4	〃	〃	
D7F5	〃	〃	
D7F6	〃	〃	
D7F7	〃	〃	
D7F8	〃	〃	
D7F9	〃	〃	
D7G1	〃	〃	
D7G2	〃	〃	
D7G3	〃	〃	
D7C1	264 P24802	LN-31GCP-LH	
D7C2	〃	〃	
D7C3	〃	〃	
D7C4	〃	〃	
D7C5	〃	〃	
D7C6	〃	〃	
D7C7	〃	〃	
D7C8	〃	〃	
D7C9	〃	〃	
D7D1	〃	〃	
D7D2	〃	〃	
D7D3	〃	〃	
D8F0	264 P04501	1S2076/1S2472	
D8F1	〃	〃	
D8F2	〃	〃	
D8F3	〃	〃	
D8F4	〃	〃	
D8F5	〃	〃	
D8F6	〃	〃	
D8F7	〃	〃	
D8F8	〃	〃	
D8F9	〃	〃	
D8G0	264 P19308	MZ309-B2	
D8G1	264 P04501	1S2076/1S2472	
D8G2	264 P19305	MZ303B	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
D901	264 P18503	M4C-31-25	
D902	264 P10103	RM-1 (V)	
D903	〃	〃	
D904	264 P10302	EQA01-11	
D905	264 P10301	EQA01-06	
D906	264 P04501	1S2076/1S2472	
D907	264 P10105	RM-1B	
D908	264 P10306	EQA01-16R	
D909	264 P10103	RM-1 (V)	
D912	264 P18503	M4C-31-25	
D913	264 P10503	EQB01-12	
D916	264 P10301	EQA01-06	
CF3A0	264 P01402	CERAMIC-FILTER	SFE-5.5MA
CF6F0	296 P02101	CERAMIC-FILTER	SFE-5.06MHz-MA
CF8A0	299 P03601	CERAMIC OSCILLATOR	
Z571	299 P03502	SENSOR-H	299P03502/ 299P04101
RP5A1	265 P06301	POISTOR	PTH62BD3R3M
X6F1	285 P01401	CRYSTAL	
X6F2	285 P01101	QUARTZ-CRYSTAL-UNIT	4.43 MHz
FILTERS & DELAY-LINE			
LPF2A0	409 P14401	LOW-PASS-FILTER	LC-1128
LPF2A1	409 P12301	〃	
LPF2A2	409 P13901	〃	X-1044H
LPF6F0	409 P13801	LOW-PASS-FILTER	
LPF6F1	409 P13101	〃	LC-929A
BPF6F0	409 P14101	BAND-PASS-FILTER	X-1074A
BPF6F1	〃	〃	〃
DL2A0	337 P03301	DELAY-LINE	
DL2A1	337 P01102	〃	
DL6F0	337 P03602	〃	ADL-CF544
TRANSFORMERS & COILS			
L91	325 C08103	COIL-PEAKING	10MH-K
L102	〃	〃	〃
L103	323 P15401	COIL-VIF	
L104	323 P15801	〃	
L105	320 P03401	COIL-TRAP	
L133	323 P15101	COIL-VIF	
L134	323 P15602	COIL-VIF-TRAP	CO-SND 33.4MH
L135	323 P11804	COIL-VIF-DET-TRAP	
L136	320 P02004	COIL-TRAP	
L137	323 P15501	〃	
L138	327 P05201	COIL-SIF	6MHz
L139	325 C08103	COIL-PEAKING	10MH-K
L151	349 P14601	COIL-TAKE-OFF	TKACT-25155

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
RRANSFORMERS & COILS			
L201	325 C08608	COIL-PEAKING	27MH-J
L202	325 C08205	〃	100MH-K
L203	325 C08702	〃	56MH-J
L204	325 C08208	〃	180MH-K
L205	325 C08005	〃	2.2MH-J
L206	325 C08607	〃	22MH-J
L207	325 C08603	〃	10MH-J
L208	325 C08307	〃	1000MH-J
L209	325 C08607	〃	22MH-J
L210	325 C08005	〃	2.2MHK
L211	325 C10005	〃	〃
L2A0	325 C10303	COIL-PEAKING	470MH-K
L2A1	325 C10103	〃	10MH-K
L2A2	325 C10303	〃	470MH-K
L2A3	325 C10103	〃	10MH-K
L2A4	325 C10207	〃	150MH-K
L2A5	325 C10004	〃	1.8MH-K
L2A6	325 C10106	〃	18MH-K
L2A7	325 C10205	〃	100MH-K
L2A9	〃	〃	〃
L2B1	325 C10205	COIL-PEAKING	100MH-K
L2B3	〃	〃	〃
L3A0	327 P05201	COIL-SIF	6MHz
L3F0	321 C01102	COIL-RF	4700MH-J
L3F1	321 C01004	COIL-FILTER	100MHK-J
L3F2	321 C01008	COIL-RF	2200MH-J
L401	409 P11701	LINE-CHOKE	
L471	411 P00104	LEAD-FERRITE	
L472	〃	〃	
L6F0	325 C10303	COIL-PEAKING	470MH-K
L6F2	325 C10209	〃	220MH-K
L6F3	325 C10102	〃	8.2MH-K
L6F4	〃	〃	〃
L6F5	325 C10109	〃	33MH-K
L6F8	325 C10701	〃	47MH-J
L6F9	325 C10702	〃	56MH-J
L6G0	325 C10209	〃	220MH-K
L6G3	325 C10205	〃	100MH-K
L6G4	325 C10008	〃	3.9MH-K
L6G5	325 C10007	〃	3.3MH-K
L6G7	325 C10205	〃	100MH-K
T131	323 P15201	TRANS-VIF	
T132	323 P15301	〃	
T3F0	409 P08702	T-OSC	712RSL-1143
CAPACITORS & RESISTORS			
C471	189 P03706	C-CERAMIC	E50V, 1000-P
C472	〃	〃	〃
C928	189 D06901	C-ELECTROLYTIC	H25V, 4700M 105
C941	189 D06902	〃	H35V, 4700M 125
VC101	202 P20205	C-TRIMMER	250V 5-50P
VC201	〃	〃	〃
VC202	〃	〃	〃

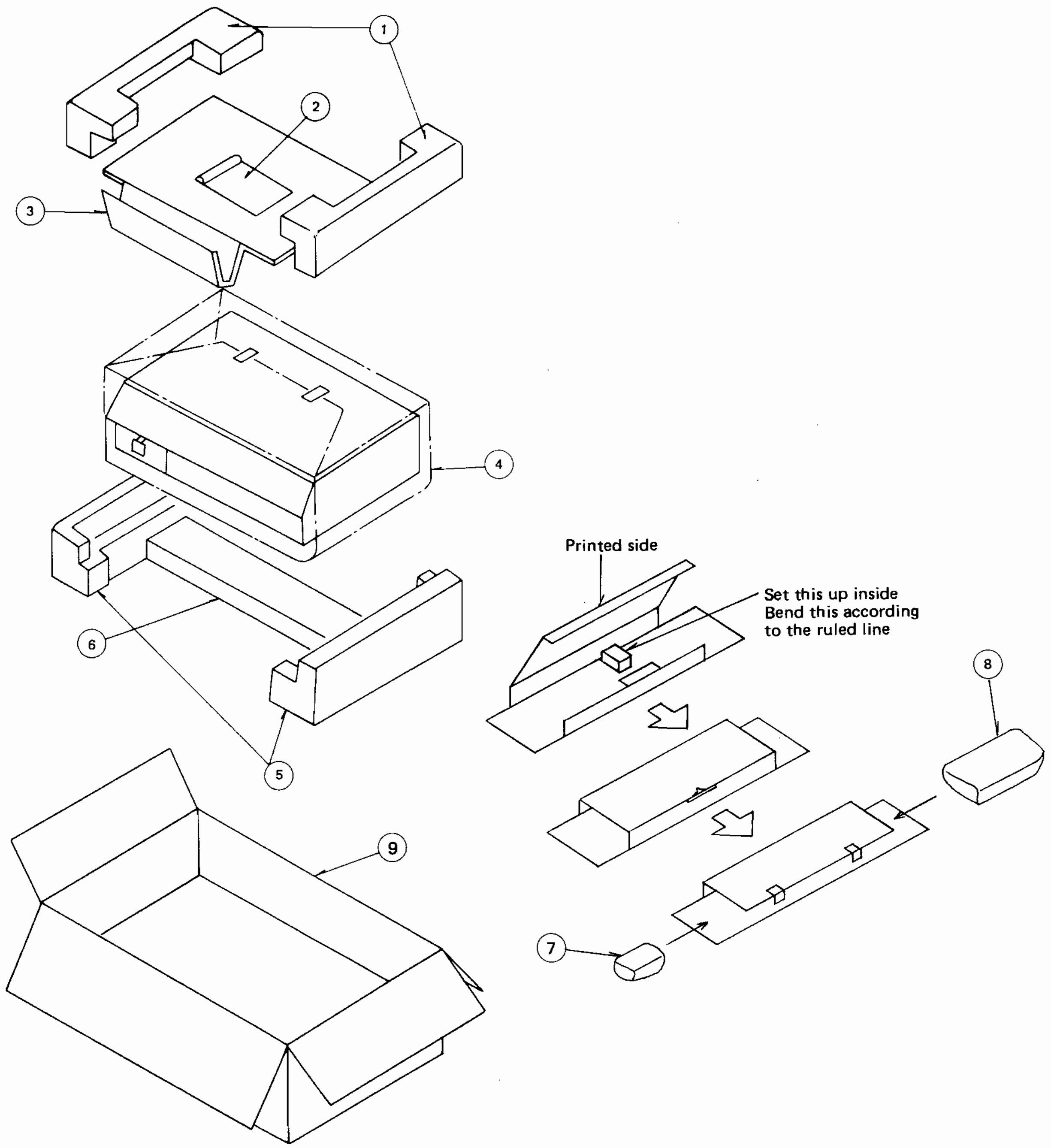
SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
VC2A0	202 P20205	C-TRIMMER	250V 5-50P
VC6F1	202 P20202	〃	250V 3P-23P
VC6F2	202 P20205	〃	250V 5P-50P
R4F9	102 P03301	R-WIRE-P	2W 0.47-K
R574	109 D04501	R-CEMENT-WIRE	10W 22-K
R5K4	109 P04903	R-NET WORK	1/8W 68K-JX4
R971	109 D03408	R-CEMENT-WIRE	10W 2.7-K
VR101	127 C02004	VR-SEMIFIXED	1/5W B1K
VR201	〃	〃	〃 〃
VR202	〃	〃	〃 〃
VR203	127 C02005	〃	1/5W B2K
VR2A0	127 C02004	VR-SEMIFIXED	1/5W B1K
VR2A1	127 C02101	〃	〃 B50K
VR2A2	127 C02007	〃	〃 B5K
VR2A4	127 C02005	〃	〃 B2K
VR2A5	127 C02007	〃	〃 B5K
VR2A6	〃	〃	〃 〃
VR2A7	127 C02009	〃	〃 B20K
VR2A8	127 C02007	〃	〃 B5K
VR3F0	127 C02009	〃	1/5W B20K
VR3F1	127 C02008	〃	〃 B10K
VR3F2	127 C02101	〃	〃 B50K
VR3F3	127 C02007	〃	〃 B5K
VR3F4	〃	〃	〃 〃
VR401	127 C02102	〃	1/5W B100K
VR402	〃	〃	〃 〃
VR403	〃	〃	〃 〃
VR404	127 C02102	〃	〃 〃
VR405	127 C02101	〃	〃 B50K
VR406	〃	〃	〃 〃
VR407	〃	〃	〃 〃
VR408	127 C02102	〃	1/5W B100K
VR409	〃	〃	〃 〃
VR410	〃	〃	〃 〃
VR411	〃	〃	〃 〃
VR412	〃	〃	〃 〃
VR4700	120 C19801	VR-PWB	1/5B-100K 20S
VR5A1	129 D04701	VR-SEMIFIXED	1/10W B-50K-M
VR6F0	127 C02005	〃	1/5W B2K
VR6F1	〃	〃	〃 〃
VR6F2	127 C02003	〃	〃 〃
VR6F3	127 C02008	〃	1/5W B10K
VR6F4	127 C02009	〃	〃 B20K
VR7A1	129 P01404	VR-CH-PRESETTER	B20K
VR7A2	〃	〃	〃
VR7A3	〃	〃	〃
VR7A4	〃	〃	〃
VR7A5	〃	〃	〃
VR7A6	〃	〃	〃
VR7A7	〃	〃	〃
VR7A8	〃	〃	〃
VR7A9	〃	〃	〃

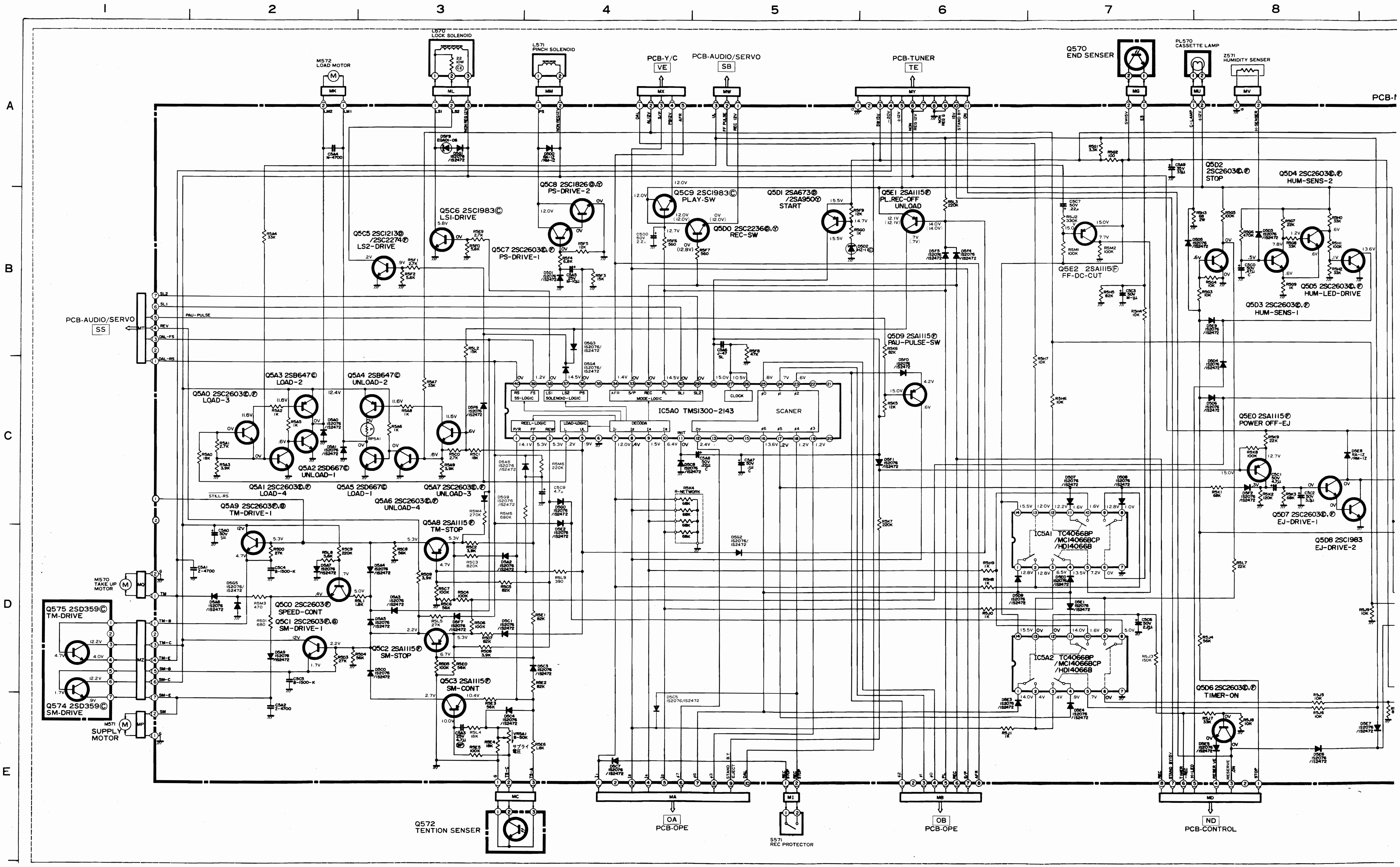
SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
CAPACITORS & RESISTORS			
VR7B1	129 P01404	VR-CH-PRESETTER	B20K
VR7B2	〃	〃	〃
VR7B3	〃	〃	〃
VR901	127 C02004	VR-SEMIFIXED	1/5W B-1K
PRINTED CIRCUIT			
	928 B05807 928 B05808	PCB-Mechanism	
	928 B06903	PCB-TUNER/POWER	
	928 B08102	PCB-CONT	
	928 B08202	PCB-OPERATION	
	928 B08505	PCB-PRESETTER	
	928 B08601	PCB-Y/C	
	928 B08701	PCB-AUDIO-SERVO	
	928 B08801	PCB-PRO	
	928 B07803	PCB-SENS	
	928 B10102	PCB-CH-SW	
	928 C09701	PCB-JACK	
MISCELLANEOUS			
	224D06501	HOUSING-CONNECTOR	2P
	224D06601	〃	3P
	242 C20901	AC-POWER-CORD	
	299D07701	BRUSH	
S501	432 P04501	SW-KEY-BOARD	FF OPERATION
S502	〃	〃	PL 〃
S503	〃	〃	STOP 〃
S504	〃	〃	REW 〃
S505	〃	〃	REC 〃
S506	〃	〃	PUSE/STILL OPERATION
S507	〃	〃	FS OPERATION
S508	〃	〃	RS 〃
S510	〃	〃	EJECT 〃
S571	431 C03201	SW-SLIDE	
S5200	432 P03601	SW-PUSH	POWER-SW
S5201	〃	〃	RESERVE-SW
S7A2	432 P04402	SW-PUSH	S7A1~S7B3 12 POSITION
S7B4	434 C01501	SW-LEVER	AFT
S8F0	432 P04501	SW-KEY-BOARD	OFF
S8F1	〃	〃	ON
S8F2	〃	〃	CLOCK
S8F3	〃	〃	MIN
S8F4	〃	〃	10 MIN
S8F5	〃	〃	1 HOUR
S8F6	〃	〃	DAY
S973	433 C01702	SW-SEESAW	MAIN-POWER-SW

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
	283D02401	FUSE	1A-T
	283D02407	〃	400MA-T
F901	283D02405	〃	2A-T
F902	283D02409	〃	T2, 5A
K3A0	287 P02001	RELAY	ME-12
L570	299 P02801	SOLENOID	LOCK-Solenoid
L571	299 P02701	〃	Pinch-Solenoid
L572	299 P03701	〃	Eject-Solenoid
M471	288 P02702	MOTOR-CP	
M570	288 P02804 288 P03201	TU-MOTOR	
M571	288 P02805	S-MOTOR	PM-4915M1
M572	288 P02901	Loading MOTOR	MY-15B2A
PL570	253 P02201	PILOT-LAMP	BQ063-30203A
V8F0	253 P02601	TUBE-FLUOR	6-LT-61ZA2
	501 P00602	COUNTER-S	
	540 C01004	LEAD-CLAMPER-N	
TU01	295 P21203	TUNER, TV	
	928 B00703	ASSY-LOWER-DRUM	
	641 C21301	ASSY-OIL-DAMPER	
	282 P00303	BOOSTER	
	939 P03202	TX-WIRE-REMOCON	
ACCESSORY-A			
	871 C05807	IB-VTR	English
	871 C05808	〃	German
	871 C05809	〃	Swedish
	871 C05900	〃	French
	840D02001	TOP-CLOTH	
	831D11002	PACKING-BAG	
	831 C05907	ENVELOPE	
	760 B04201	LABEL-NUMBER	
ACCESSORY-B			
	242 C20901	AC-POWER-CORD	
	242D23101	CABLE	
	831D11005	PACKING-BAG	
	851 D60601	LABLE-CORD	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIP-TION
1	803A05503	Cushion	
2	–	Accessory-A	
3	802D17701	SHEET-TOP	
4	831D17301	Packing-Bag	
5	803A05501	Cushion	
6	829C03101	Box-Accessory	
7	939P03202	TX-WIRE-REMOCON	
8	–	Accessory-B	
9	802C37909	Packing-Case	

6. PACKING PARTS


①
②
③
④
⑥
⑤
⑨
Printed side
Set this up inside
Bend this according
to the ruled line
⑧
⑦


1
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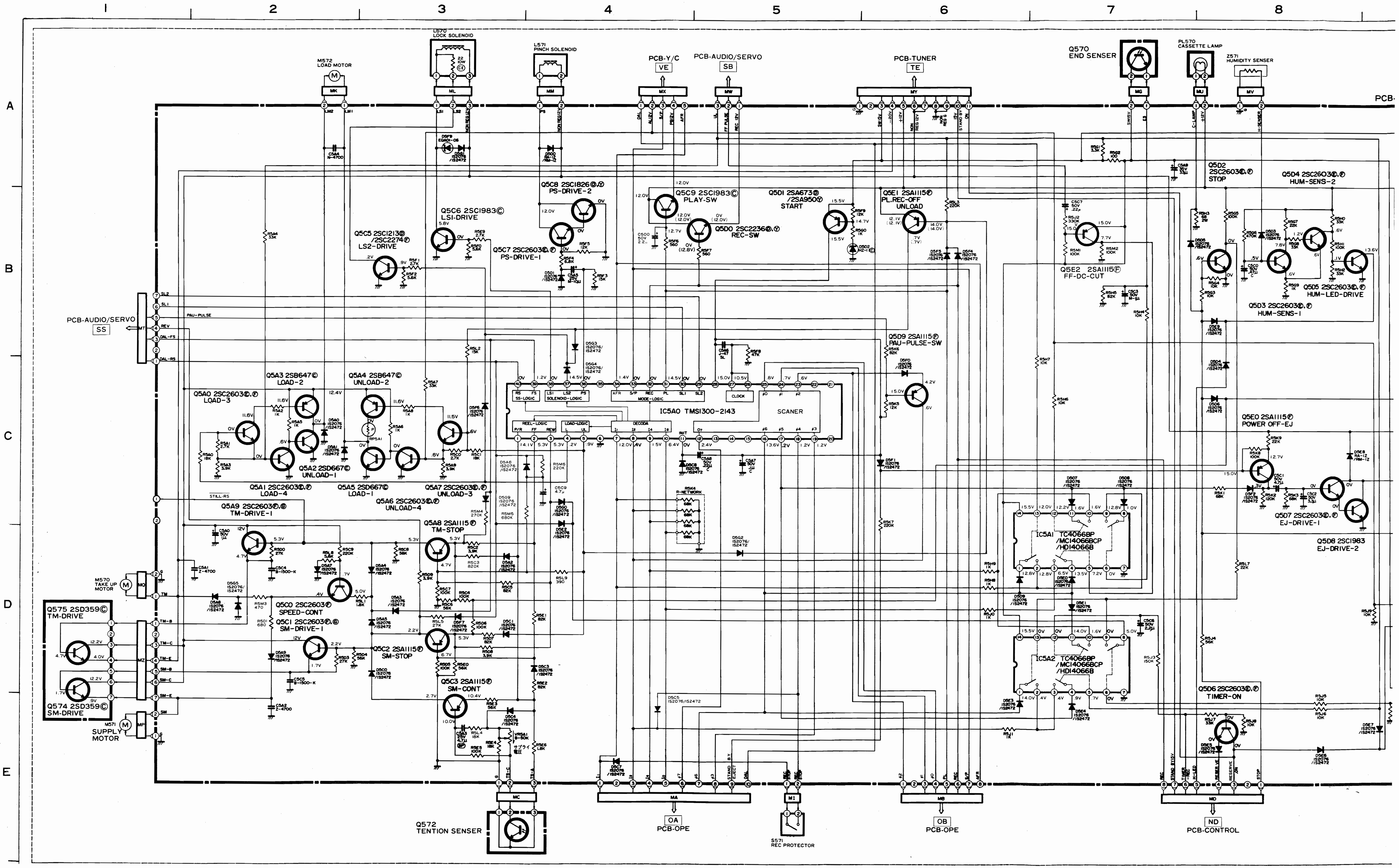
A
B
C
D
E
M572 LOAD MOTOR
L570 LOCK SOLENOID
L571 PINCH SOLENOID
PCB-Y/C
VE
PCB-AUDIO/SERVO
SB
PCB-TUNER
TE
Q570 END SENSER
PL570 CASSETTE LAMP
Z571 HUMIDITY SENSER
PCB-
MK
ML
MM
MX
MW
MY
MG
MU
MV
Q5C8 2SC1826Ⓞ.Ⓨ PS-DRIVE-2
Q5C9 2SC1983Ⓒ PLAY-SW
Q5D1 2SA673Ⓓ /2SA950Ⓨ START
Q5E1 2SA1115Ⓕ PL.REC-OFF UNLOAD
Q5D2 2SC2603Ⓔ.Ⓕ STOP
Q5D4 2SC2603Ⓔ.Ⓕ HUM-SENS-2
Q5C6 2SC1983Ⓒ LS1-DRIVE
Q5C5 2SC1213Ⓓ /2SC2274Ⓕ LS2-DRIVE
Q5C7 2SC2603Ⓔ.Ⓕ PS-DRIVE-1
Q5D0 2SC2236Ⓞ.Ⓨ REC-SW
Q5E2 2SA1115Ⓕ FF-DC-CUT
Q5D5 2SC2603Ⓔ.Ⓕ HUM-LED-DRIVE
Q5D3 2SC2603Ⓔ.Ⓕ HUM-SENS-1
PCB-AUDIO/SERVO
SS
PAU-PULSE
STILL-RS
Q5D9 2SA1115Ⓕ PAU-PULSE-SW
Q5A3 2SB647Ⓒ LOAD-2
Q5A4 2SB647Ⓒ UNLOAD-2
Q5A0 2SC2603Ⓔ.Ⓕ LOAD-3
Q5A2 2SD667Ⓒ UNLOAD-1
Q5A1 2SC2603Ⓔ.Ⓕ LOAD-4
Q5A5 2SD667Ⓒ LOAD-1
Q5A7 2SC2603Ⓔ.Ⓕ UNLOAD-3
Q5A6 2SC2603Ⓔ.Ⓕ UNLOAD-4
IC5A0 TMS1300-2143
SS-LOGIC
SOLENOID-LOGIC
MODE-LOGIC
REEL-LOGIC
LOAD-LOGIC
DECODA
SCANER
CLOCK
R5K4 R-NETWORK
Q5E0 2SA1115Ⓕ POWER OFF-EJ
Q5D7 2SC2603Ⓔ.Ⓕ EJ-DRIVE-1
Q5D8 2SC1983 EJ-DRIVE-2
IC5A1 TC4066BP /MC14066BCP /HD14066B
IC5A2 TC4066BP /MC14066BCP /HD14066B
Q5A9 2SC2603Ⓔ.Ⓖ TM-DRIVE-1
Q5A8 2SA1115Ⓕ TM-STOP
M570 TAKE UP MOTOR
MQ
Q5C0 2SC2603Ⓔ SPEED-CONT
Q5C1 2SC2603Ⓔ.Ⓖ SM-DRIVE-1
Q5C2 2SA1115Ⓕ SM-STOP
Q5C3 2SA1115Ⓕ SM-CONT
Q575 2SD359Ⓒ TM-DRIVE
Q574 2SD359Ⓒ SM-DRIVE
MZ
M571 SUPPLY MOTOR
MP
Q5D6 2SC2603Ⓔ.Ⓕ TIMER-ON
MC
Q572 TENTION SENSER
MA
OA
PCB-OPE
MI
S571 REC PROTECTOR
MB
OB
PCB-OPE
MD
ND
PCB-CONTROL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A
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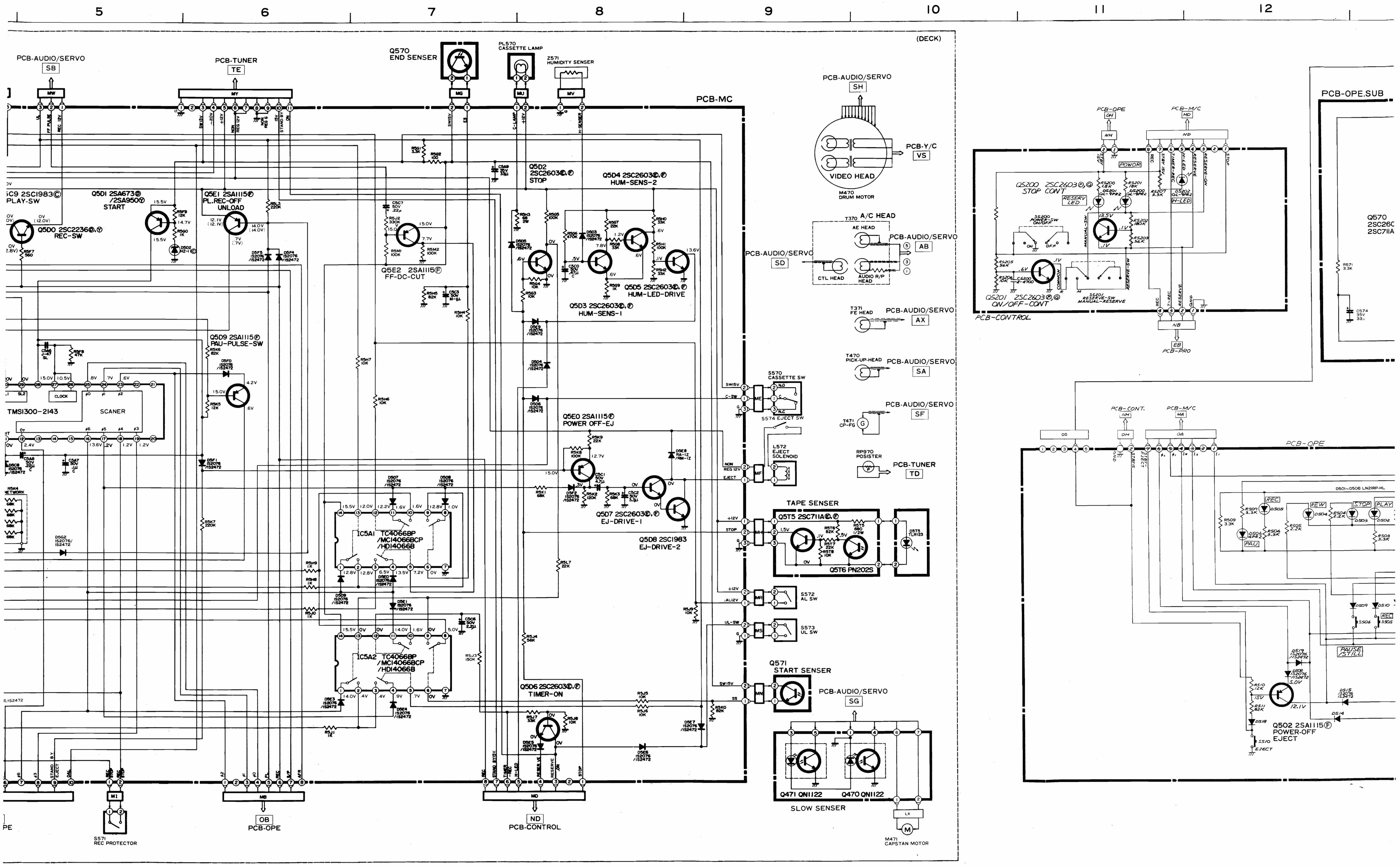
D
E
M572 LOAD MOTOR
L570 LOCK SOLENOID
L571 PINCH SOLENOID
PCB-Y/C
VE
PCB-AUDIO/SERVO
SB
PCB-TUNER
TE
Q570 END SENSER
PL570 CASSETTE LAMP
Z571 HUMIDITY SENSER
PCB-
MK
ML
MM
MX
MW
MY
MG
MU
MV
Q5C8 2SC1826Ⓞ,Ⓨ PS-DRIVE-2
Q5C9 2SC1983Ⓒ PLAY-SW
Q5D1 2SA673Ⓓ /2SA950Ⓨ START
Q5E1 2SA1115Ⓕ PL.REC-OFF UNLOAD
Q5D2 2SC2603Ⓔ,Ⓕ STOP
Q5D4 2SC2603Ⓔ,Ⓕ HUM-SENS-2
Q5C6 2SC1983Ⓒ LSI-DRIVE
Q5C5 2SC1213Ⓓ /2SC2274Ⓕ LS2-DRIVE
Q5C7 2SC2603Ⓔ,Ⓕ PS-DRIVE-1
Q5D0 2SC2236Ⓞ,Ⓨ REC-SW
Q5E2 2SA1115Ⓕ FF-DC-CUT
Q5D5 2SC2603Ⓔ,Ⓕ HUM-LED-DRIVE
Q5D3 2SC2603Ⓔ,Ⓕ HUM-SENS-1
PCB-AUDIO/SERVO
SS
MT
SL2
SL1
PAU-PULSE
REV
DAL-FS
DAL-RS
Q5D9 2SA1115Ⓕ PAU-PULSE-SW
Q5A3 2SB647Ⓒ LOAD-2
Q5A4 2SB647Ⓒ UNLOAD-2
Q5A0 2SC2603Ⓔ,Ⓕ LOAD-3
IC5A0 TMS1300-2143
SS-LOGIC
SOLENOID-LOGIC
MODE-LOGIC
CLOCK
SCANER
REEL-LOGIC
LOAD-LOGIC
DECODA
Q5E0 2SA1115Ⓕ POWER OFF-EJ
Q5A2 2SD667Ⓒ UNLOAD-1
Q5A1 2SC2603Ⓔ,Ⓕ LOAD-4
Q5A5 2SD667Ⓒ LOAD-1
Q5A7 2SC2603Ⓔ,Ⓕ UNLOAD-3
Q5A6 2SC2603Ⓔ,Ⓕ UNLOAD-4
Q5A9 2SC2603Ⓔ,Ⓕ,Ⓖ TM-DRIVE-1
STILL-RS
R5K4 R-NETWORK
Q5D7 2SC2603Ⓔ,Ⓕ EJ-DRIVE-1
Q5D8 2SC1983 EJ-DRIVE-2
Q5A8 2SA1115Ⓕ TM-STOP
IC5A1 TC4066BP /MC14066BCP /HD14066B
M570 TAKE UP MOTOR
MQ
TM
Q5C0 2SC2603Ⓕ SPEED-CONT
Q5C1 2SC2603Ⓕ,Ⓖ SM-DRIVE-1
Q575 2SD359Ⓒ TM-DRIVE
MZ
TM-B
TM-C
TM-E
SM-B
SM-C
SM-E
Q5C2 2SA1115Ⓕ SM-STOP
IC5A2 TC4066BP /MC14066BCP /HD14066B
Q5D6 2SC2603Ⓔ,Ⓕ TIMER-ON
Q574 2SD359Ⓒ SM-DRIVE
M571 SUPPLY MOTOR
MP
SM
Q5C3 2SA1115Ⓕ SM-CONT
サプライ電圧
MC
Q572 TENTION SENSER
MA
OA
PCB-OPE
MI
S571 REC PROTECTOR
MB
OB
PCB-OPE
MD
ND
PCB-CONTROL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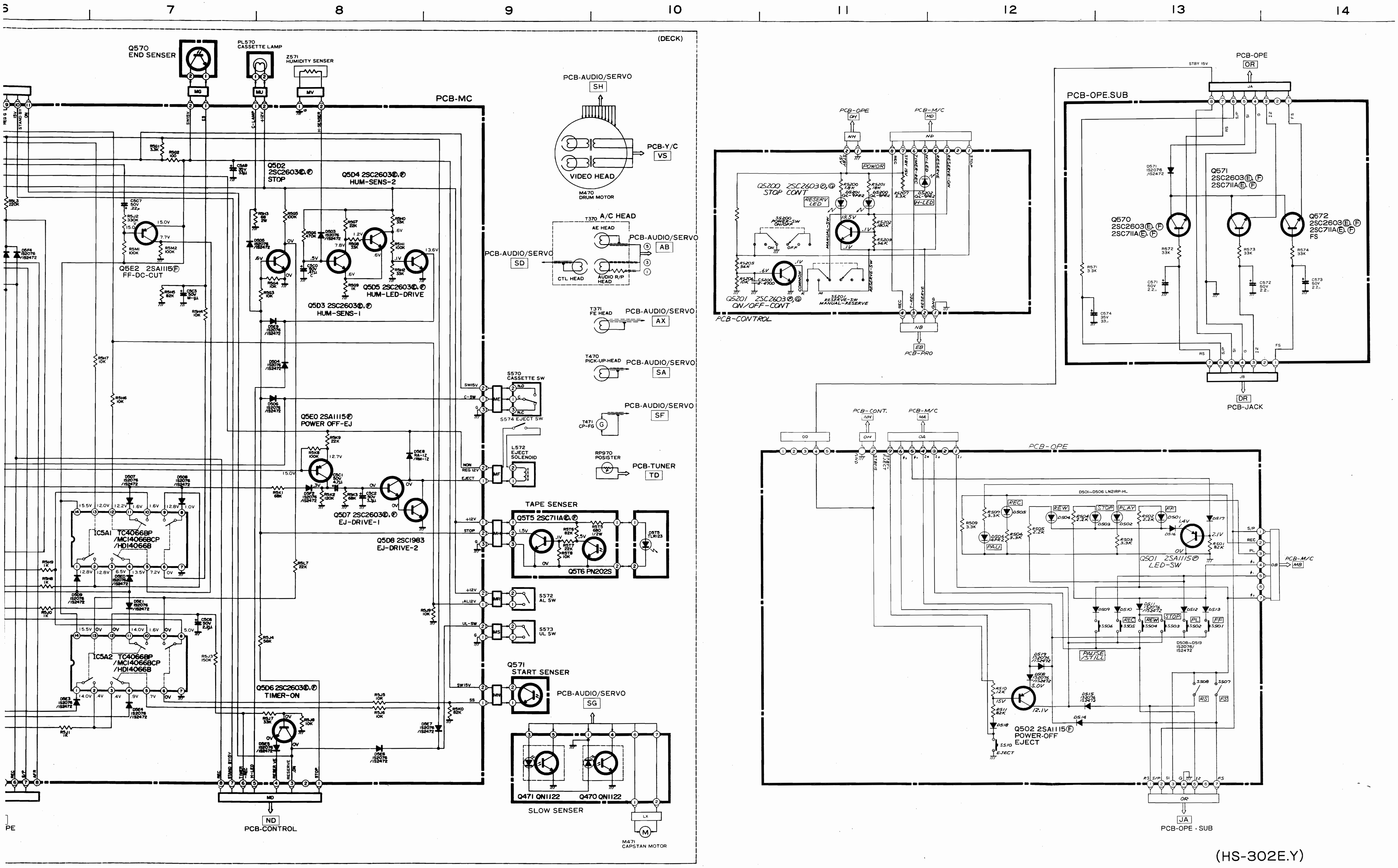
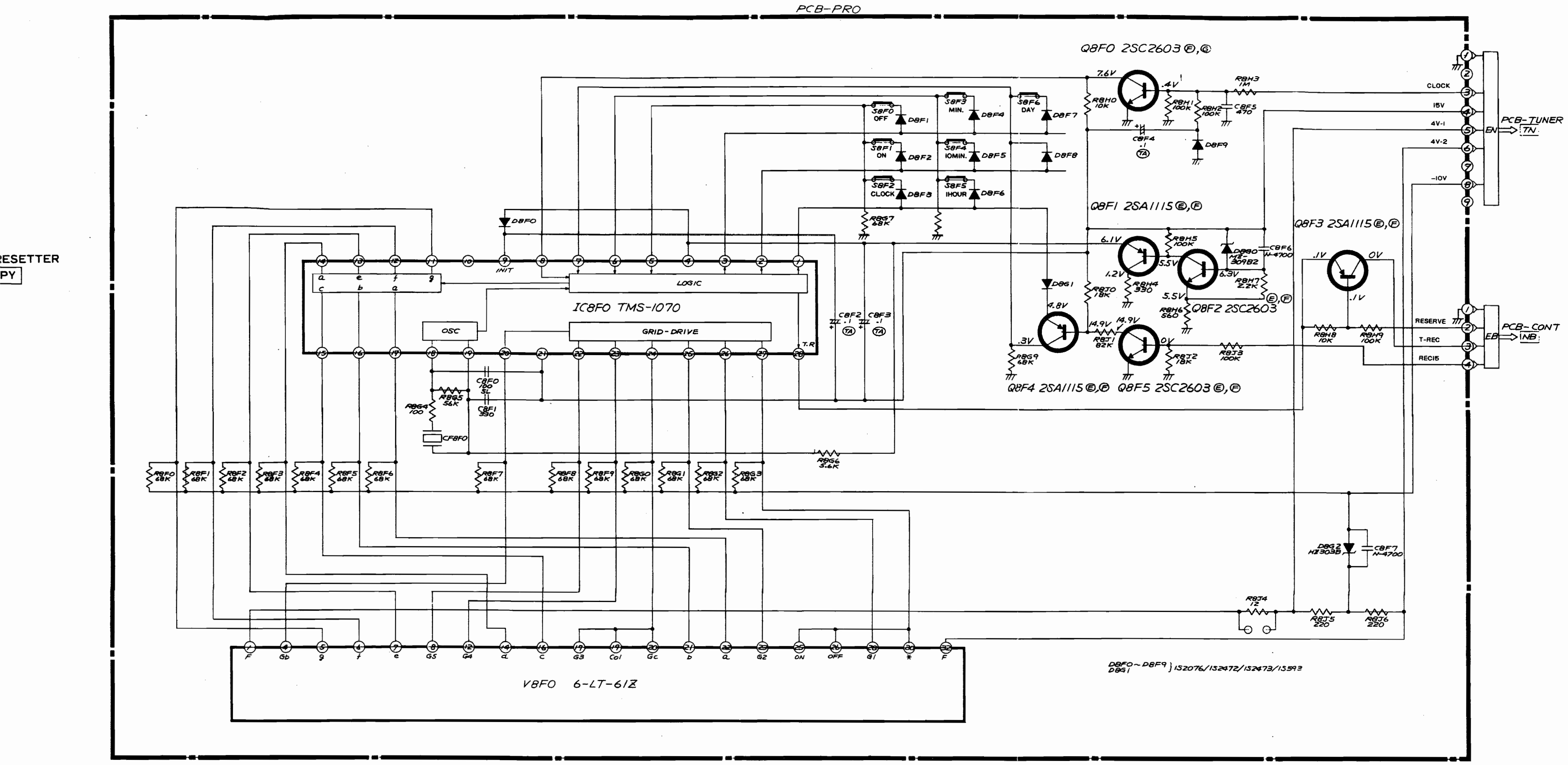
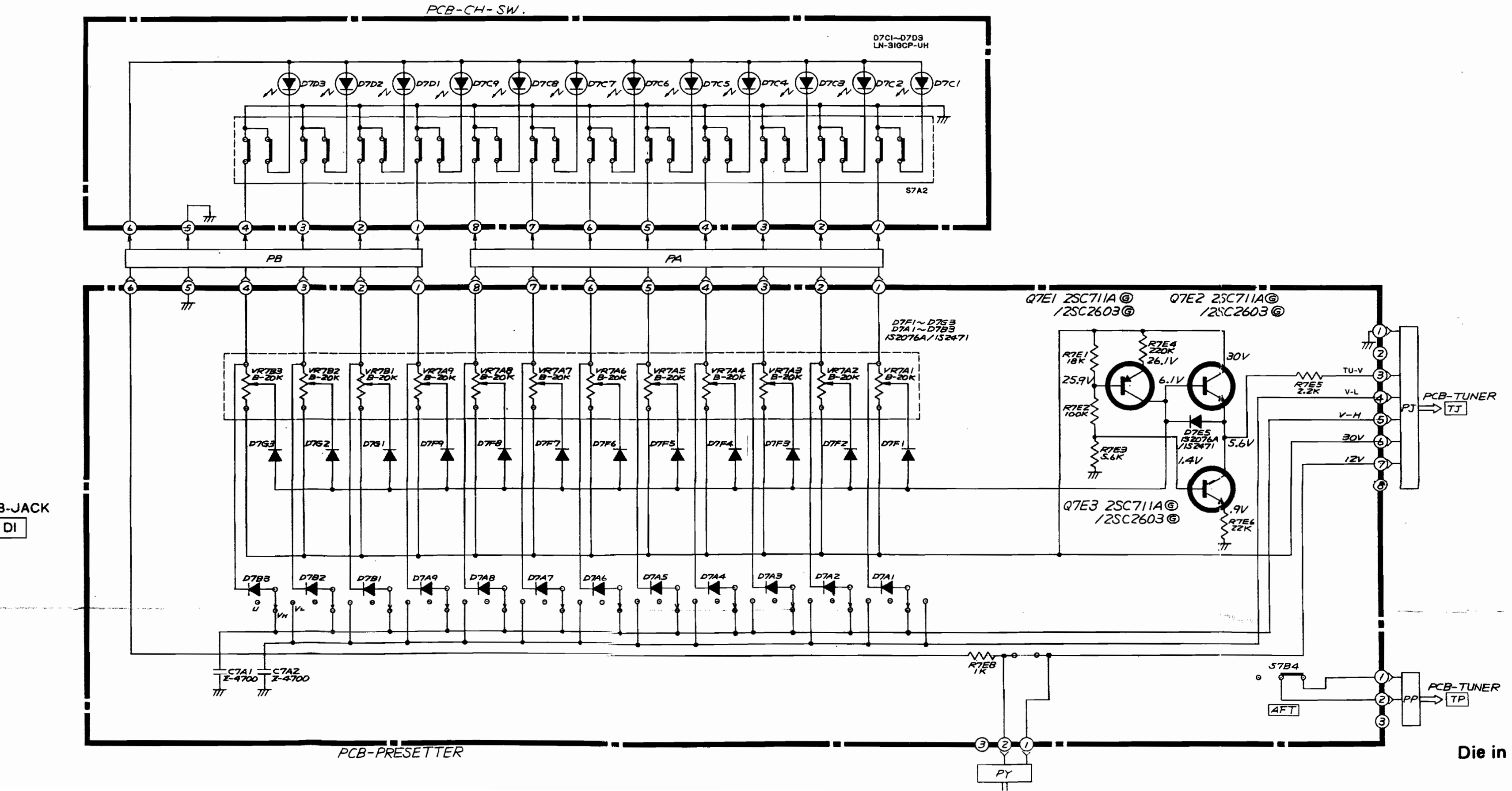
12
(DECK)
PCB-AUDIO/SERVO
SB
PCB-TUNER
TE
Q570
END SENSER
PL570
CASSETTE LAMP
Z571
HUMIDITY SENSER
PCB-MC
PCB-AUDIO/SERVO
SH
PCB-Y/C
VS
VIDEO HEAD
M470
DRUM MOTOR
2SC1983
PLAY-SW
Q5D1 2SA673
/2SA950
START
Q5E1 2SA1115
PL.REC-OFF
UNLOAD
Q5D0 2SC2236
REC-SW
Q5D2
2SC2603
STOP
Q5D4 2SC2603
HUM-SENS-2
Q5E2 2SA1115
FF-DC-CUT
Q5D5 2SC2603
HUM-LED-DRIVE
Q5D3 2SC2603
HUM-SENS-1
T370
A/C HEAD
AE HEAD
PCB-AUDIO/SERVO
AB
PCB-AUDIO/SERVO
SD
CTL HEAD
AUDIO R/P HEAD
T371
FE HEAD
PCB-AUDIO/SERVO
AX
T470
PICK-UP-HEAD
PCB-AUDIO/SERVO
SA
PCB-AUDIO/SERVO
SF
T471
CP-FG
RP970
POSISTER
PCB-TUNER
TD
Q5D9 2SA1115
PAU-PULSE-SW
TMS1300-2143
SCANER
CLOCK
Q5E0 2SA1115
POWER OFF-EJ
S570
CASSETTE SW
S574 EJECT SW
L572
EJECT
SOLENOID
Q5D7 2SC2603
EJ-DRIVE-1
Q5D8 2SC1983
EJ-DRIVE-2
IC5A1 TC4066BP
/MC14066BCP
/HD14066B
TAPE SENSER
Q5T5 2SC711A
Q5T6 PN202S
S572
AL SW
S573
UL SW
IC5A2 TC4066BP
/MC14066BCP
/HD14066B
Q571
START SENSER
PCB-AUDIO/SERVO
SG
Q5D6 2SC2603
TIMER-ON
Q471 QN1122
Q470 QN1122
SLOW SENSER
M471
CAPSTAN MOTOR
S571
REC PROTECTOR
OB
PCB-OPE
ND
PCB-CONTROL
PCB-OPE
PCB-M/C
Q5200 2SC2603
STOP CONT
RESERV LED
POWOR
H-LED
Q5201 2SC2603
ON/OFF-CONT
S5200
POWER-SW
ON/OFF
S5201
RESERVE-SW
MANUAL-RESERVE
PCB-CONTROL
EB
PCB-PRO
PCB-OPE.SUB
Q570
2SC26
2SC711A
PCB-CONT.
PCB-M/C
PCB-OPE
D501-D506 LN21RP-HL
REC
PZW
STOP
PLAY
PAU
PAUSE
/STILL
Q502 2SA1115
POWER-OFF
EJECT
S510
EJECT


7
8
9
10
11
12
13
14
(DECK)
Q570 END SENSER
PL570 CASSETTE LAMP
Z571 HUMIDITY SENSER
PCB-MC
PCB-AUDIO/SERVO SH
PCB-Y/C VS
VIDEO HEAD
M470 DRUM MOTOR
Q5D2 2SC2603Ⓔ,Ⓕ STOP
Q5D4 2SC2603Ⓔ,Ⓕ HUM-SENS-2
Q5E2 2SA1115Ⓕ FF-DC-CUT
Q5D5 2SC2603Ⓔ,Ⓕ HUM-LED-DRIVE
Q5D3 2SC2603Ⓔ,Ⓕ HUM-SENS-1
T370 A/C HEAD
AE HEAD
CTL HEAD
AUDIO R/P HEAD
PCB-AUDIO/SERVO AB
PCB-AUDIO/SERVO SD
T371 FE HEAD
PCB-AUDIO/SERVO AX
T470 PICK-UP-HEAD
PCB-AUDIO/SERVO SA
T471 CP-FG
PCB-AUDIO/SERVO SF
RP970 POSISTER
PCB-TUNER TD
S570 CASSETTE SW
S574 EJECT SW
L572 EJECT SOLENOID
Q5E0 2SA1115Ⓕ POWER OFF-EJ
Q507 2SC2603Ⓔ,Ⓕ EJ-DRIVE-1
Q508 2SC1983 EJ-DRIVE-2
TAPE SENSER
Q5T5 2SC711AⒺ,Ⓕ
Q5T6 PN202S
D5T5 TLR123
IC5A1 TC4066BP /MC14066BCP /HD14066B
IC5A2 TC4066BP /MC14066BCP /HD14066B
S572 AL SW
S573 UL SW
Q571 START SENSER
PCB-AUDIO/SERVO SG
Q5D6 2SC2603Ⓔ,Ⓕ TIMER-ON
Q471 QN1122
Q470 QN1122
SLOW SENSER
M471 CAPSTAN MOTOR
ND PCB-CONTROL
PCB-OPE OH
PCB-M/C MD
POWOR
Q5200 2SC2603Ⓔ,Ⓖ STOP CONT
RESERV LED
S5200 POWER-SW ON/OFF
Q5201 2SC2603Ⓔ,Ⓖ ON/OFF-CONT
S5201 RESERVE-SW MANUAL-RESERVE
H-LED
PCB-CONTROL
EB PCB-PRO
PCB-OPE OR
STBY 15V
PCB-OPE.SUB
Q571 2SC2603Ⓔ,Ⓕ 2SC711AⒺ,Ⓕ
Q570 2SC2603Ⓔ,Ⓕ 2SC711AⒺ,Ⓕ
Q572 2SC2603Ⓔ,Ⓕ 2SC711AⒺ,Ⓕ FS
DR PCB-JACK
PCB-CONT. NH
PCB-M/C MA
PCB-OPE
D501~D506 LN21RP-HL
REC
REW
STOP
PLAY
FF
PAU
Q501 2SA1115Ⓕ LED-SW
PCB-M/C MB
PAUSE /STILL
RS
FS
Q502 2SA1115Ⓕ POWER-OFF EJECT
S510 EJECT
JA PCB-OPE · SUB

(HS-302E.Y)


RESETTER
PY
PCB-PRO
Q8F0 2SC2603 Ⓔ,Ⓕ
Q8F1 2SA1115 Ⓔ,Ⓕ
Q8F2 2SC2603 Ⓔ,Ⓕ
Q8F3 2SA1115 Ⓔ,Ⓕ
Q8F4 2SA1115 Ⓔ,Ⓕ
Q8F5 2SC2603 Ⓔ,Ⓕ
IC8F0 TMS-1070
LOGIC
OSC
GRID-DRIVE
INIT
S8F0 OFF
S8F1 ON
S8F2 CLOCK
S8F3 MIN.
S8F4 10MIN.
S8F5 1HOUR
S8F6 DAY
CLOCK
15V
4V-1
4V-2
-10V
RESERVE
T-REC
REC15
PCB-TUNER
TN
PCB-CONT
NB
V8F0 6-LT-61Z
D8F0~D8F9
D8G1
1S2076/1S2472/1S2473/1S593
D8G2 HZ303B
CF8F0


B-JACK
DI
PCB-CH-SW.
D7C1~D7D3
LN-310GP-UH
S7A2
PB
PA
Q7E1 2SC711A Ⓔ /2SC2603 Ⓔ
Q7E2 2SC711A Ⓔ /2SC2603 Ⓔ
Q7E3 2SC711A Ⓔ /2SC2603 Ⓔ
D7F1~D7G3
D7A1~D7B3
1S2076A/1S2471
TU-V
V-L
V-H
30V
12V
PCB-TUNER
TJ
S7B4
AFT
PCB-TUNER
TP
PCB-PRESETTER
PY

SCHEMATIC DIAGRAM

HINWEIS 1:

1. Die Bezeichnung "Ohm" wurde im Schaltplan weggelassen, so daß K gleich 1000 Ohm und M gleich 1000 kOhm bedeuten.
2. Die Wattzahl der nicht bezeichneten Widerstände beträgt 0,25 Watt.
3. Nicht bezeichnete Widerstände sind Kohlewiderstände oder feste Kompositwiderstände.
4. Die folgenden Symbole werden für Widerstände verwendet:

   CE : Verklebte Widerstände
   MB : Metalloxyd-Schichtwiderstände
   Ⓦ : Drahtspulen-Widerstände
5. Die Toleranz der nicht bezeichneten Widerstände beträgt: ± 5%, K = ± 10%, M = ± 20%
6. Die Werte der nicht bezeichneten Kondensatoren sind wie folgt:
   - a) µF für Zahlen unter 1
   - b) pF für Zahlen über 1
7. Nicht bezeichnete Kondensatoren sind Keramik-Kondensatoren, mit der Ausnahme von Elektrolyt-Kondensatoren.
8. Die folgenden Symbole werden für Kondensatoren verwendet:

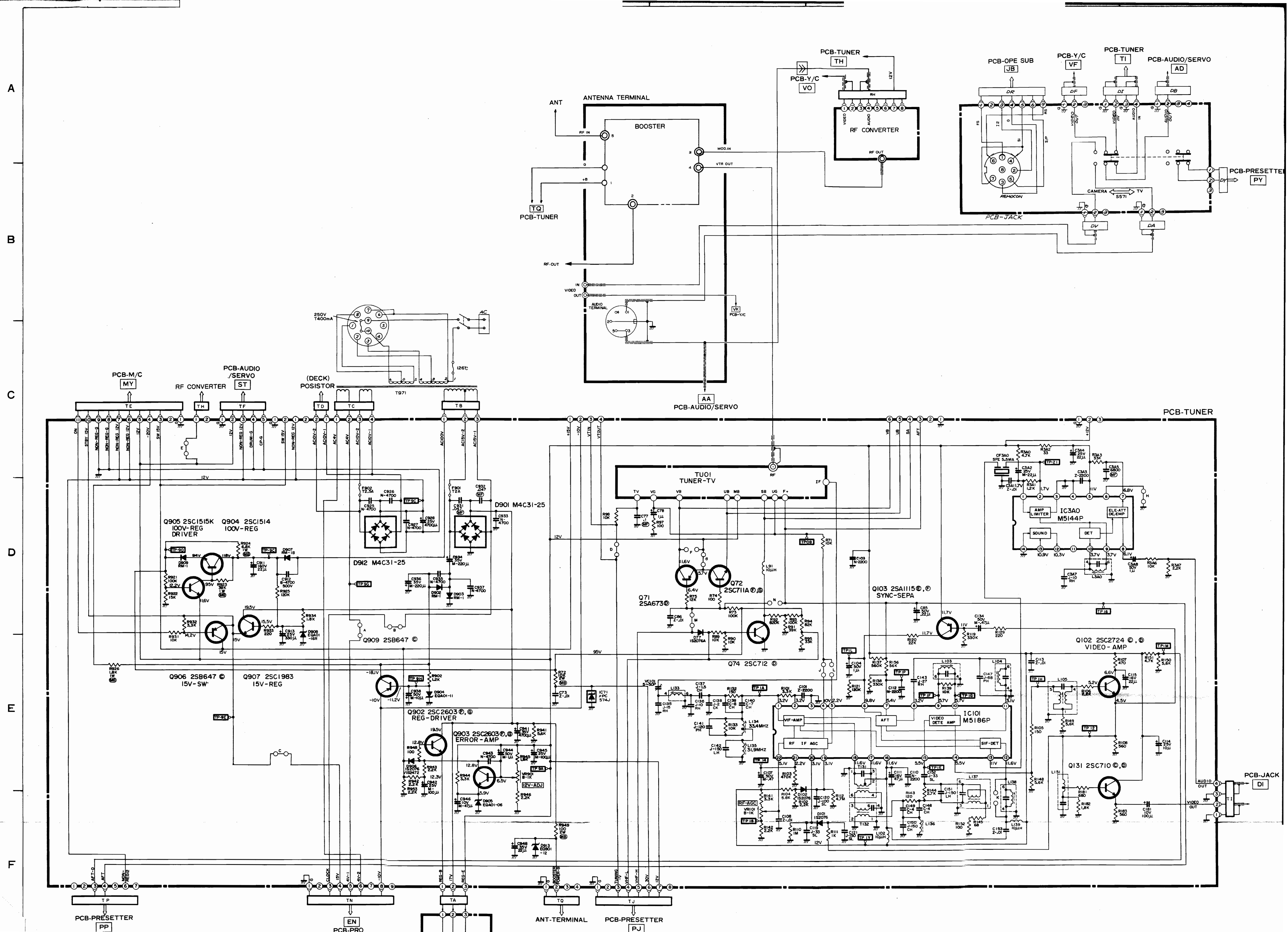
   ALM : Aluminium-Elektrolyt-Kondensatoren
   MF : Polyester-Kondensatoren
   PP : Polypropylen-Schichtkondensatoren
   TAN : Tantal-Kondensatoren
   ⫩ : Elektrolyt-Kondensatoren
9. Die Gleichstrom-Betriebsspannung der nicht bezeichneten Kondensatoren beträgt 50 V.
10. Die Toleranz der nicht bezeichneten Kondensatoren beträgt: ± 10%, J = ± 5%, M = ± 20%, P = +100% –0%, C = ± 0,25 pF, D = ± 0,5 pF, F = ± 1 pF, Z = +80% –20%
11. Keramik-Kondensatoren mit den Bezeichnungen RH, UJ, SL usw. sind Temperatur-Kompensations-Kondensatoren.

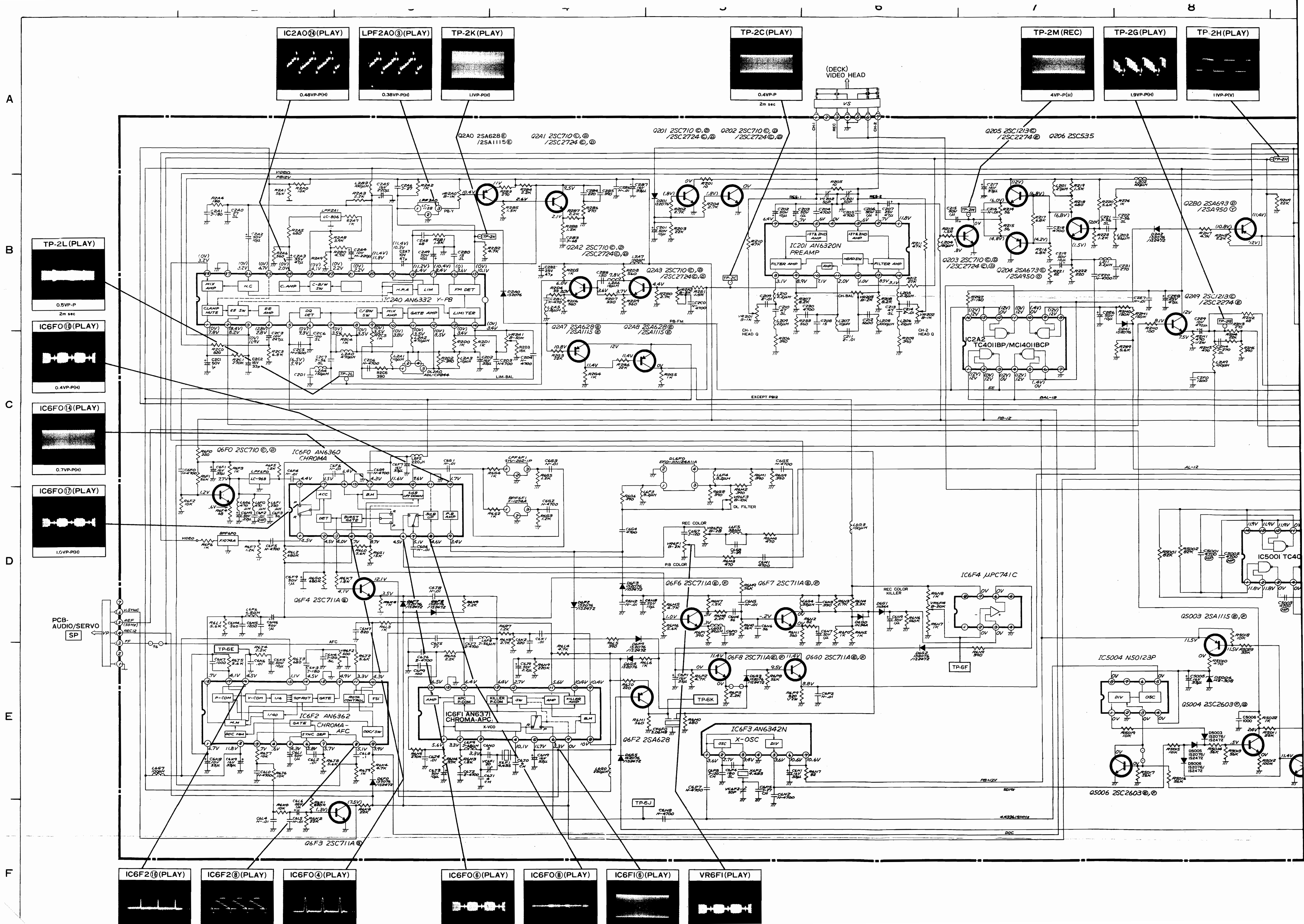
BESONDERE SYMBOLE	
Zener-Diode	Varistor
Regelkondensator	Kristalleinheit
Posistor	Luftspalt
Thermistor	Auf der Leiterbahnenseite der Leiterplatte angebrachtes Teil (Widerstand)
Schmelzwiderstand	Keramikfilter

HINWEIS 2:

1. Die Gleichspannungen wurden mit einem Röhrenvoltmeter an den angegebenen Punkten gemessen.
2. Die Oscilloskope wurden bei auf Normalbild eingestellten Reglern aufgenommen.
3. Dies ist nur ein grundlegender Schaltplan. Abhängig von technischen Verbesserungen könnte der tatsächliche Schaltplan der Geräte anders aussehen.

Die in Klammern angegebenen Spannungen gelten für Aufnahme, die Spannungen ohne Klammern für Wiedergabe.


A
B
C
D
E
F
ANTENNA TERMINAL
ANT
BOOSTER
RF IN
MOD.IN
VTR OUT
RF-OUT
TQ
PCB-TUNER
AUDIO TERMINAL
VIDEO IN
VIDEO OUT
VK
PCB-Y/C
AA
PCB-AUDIO/SERVO
RF CONVERTER
RF OUT
TH
PCB-TUNER
VO
PCB-Y/C
PCB-OPE SUB
JB
PCB-Y/C
VF
PCB-TUNER
TI
PCB-AUDIO/SERVO
AD
DR
DF
DI
DB
REMOCON
CAMERA
TV
S571
PCB-JACK
DV
DA
PCB-PRESETTER
PY
AC
250V
T400mA
T971
126℃
PCB-M/C
MY
RF CONVERTER
PCB-AUDIO
/SERVO
ST
(DECK)
POSISTOR
TE
TH
TF
TD
TC
TB
PCB-TUNER
TU01
TUNER-TV
IC3A0
M5144P
AMP LIMITER
ELE-ATT DE-EMP
SOUND
DET
CF3A0
SFE 5.5MA
D901 M4C31-25
D912 M4C31-25
Q905 2SC1515K
100V-REG
DRIVER
Q904 2SC1514
100V-REG
Q909 2SB647 ©
Q906 2SB647 ©
15V-SW
Q907 2SC1983
15V-REG
Q902 2SC2603 Ⓕ,Ⓖ
REG-DRIVER
Q903 2SC2603 Ⓕ,Ⓖ
ERROR-AMP
12V-ADJ
Q71
2SA673Ⓓ
Q72
2SC711A Ⓕ,Ⓖ
Q74 2SC712 Ⓓ
Q103 2SA1115 Ⓔ,Ⓕ
SYNC-SEPA
Q102 2SC2724 Ⓒ,Ⓓ
VIDEO-AMP
IC101
M5186P
VIF-AMP
RF IF AGC
AFT
VIDEO DETE AMP
SIF-DET
RF-AGC
Q131 2SC710 Ⓒ,Ⓓ
PCB-JACK
DI
AUDIO OUT
VIDEO OUT
IC71
μPC 574J
TP
PCB-PRESETTER
PP
TN
EN
PCB-PRO
TA
TQ
ANT-TERMINAL
TJ
PCB-PRESETTER
PJ


6
7
8
A
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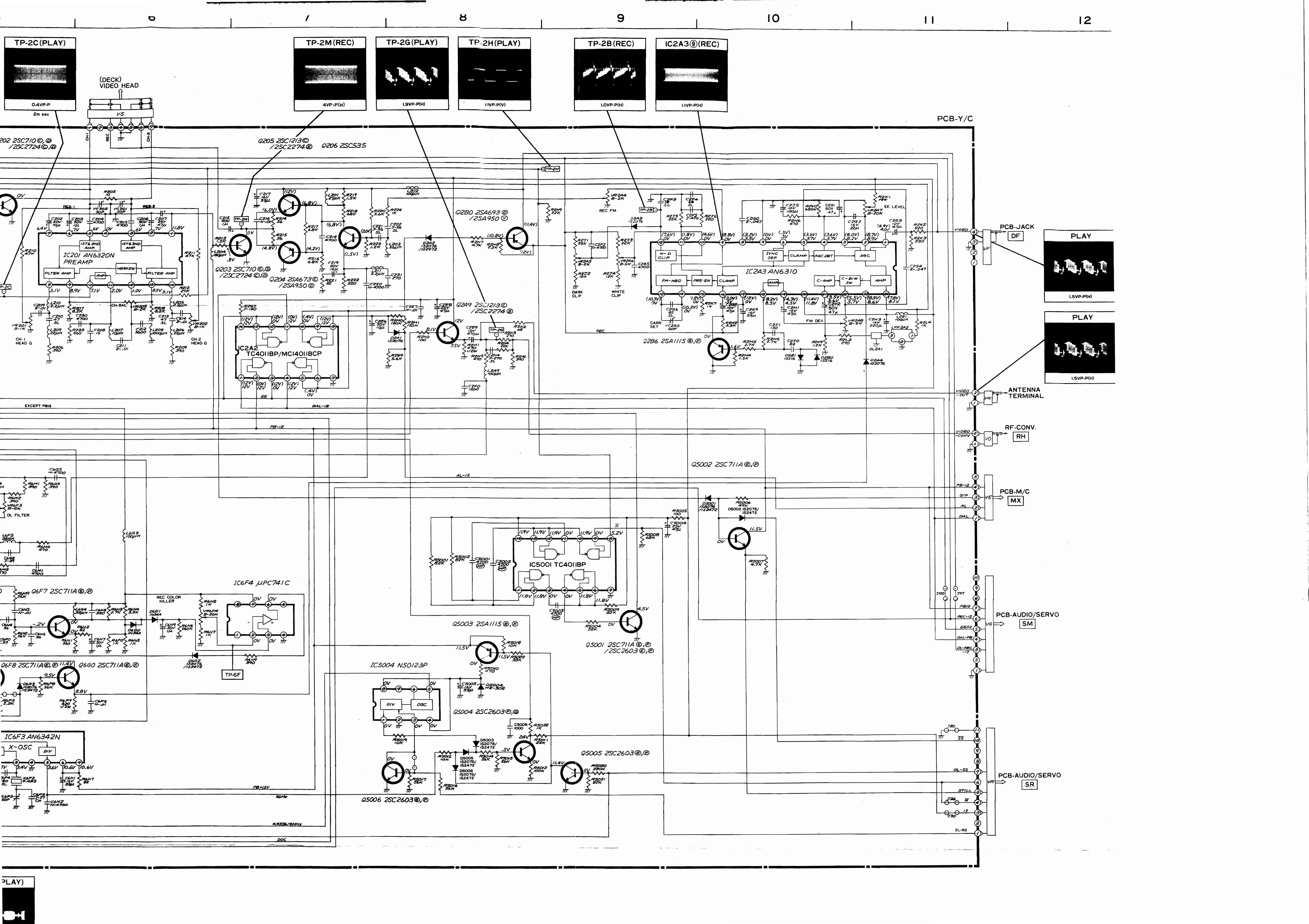
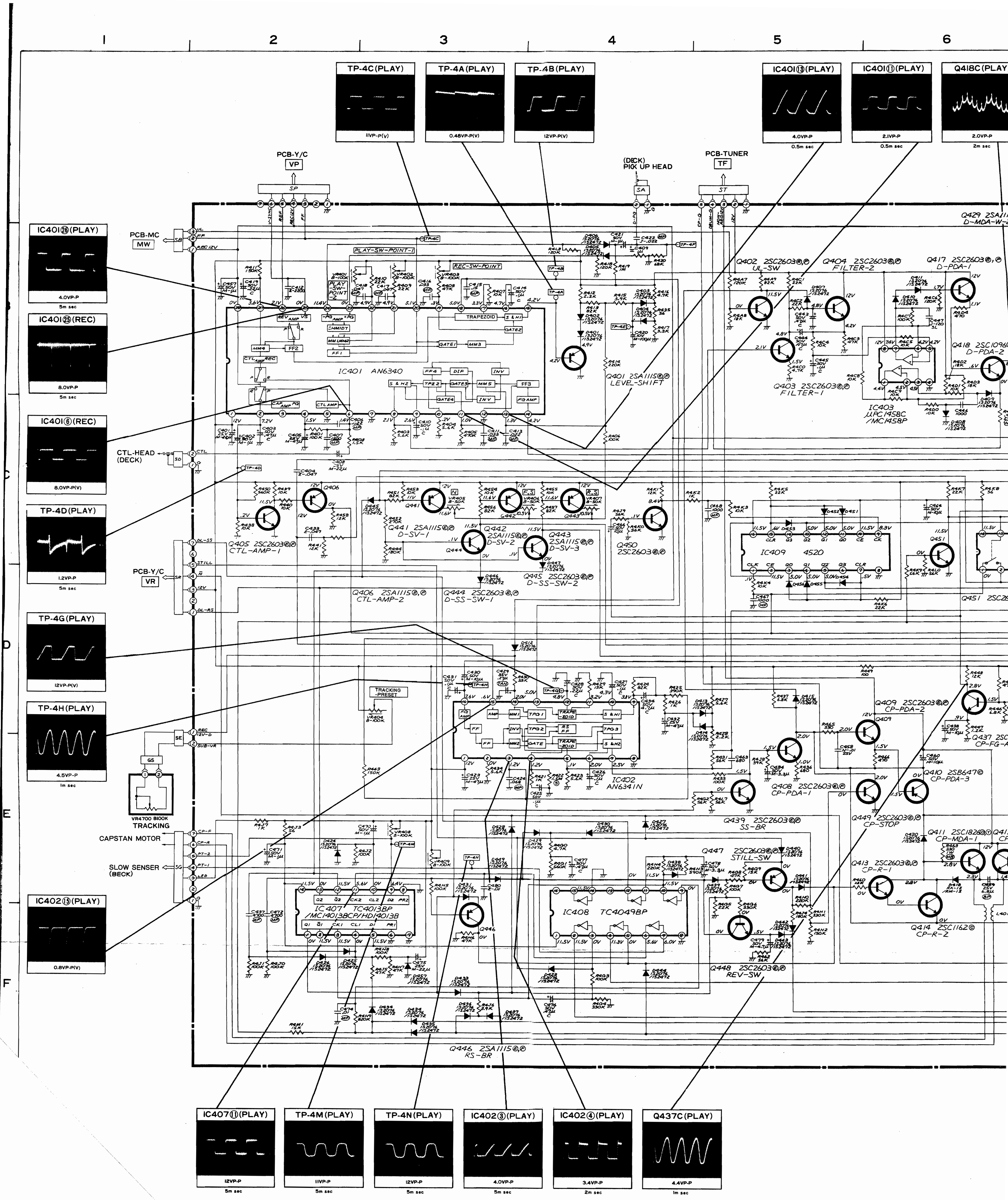
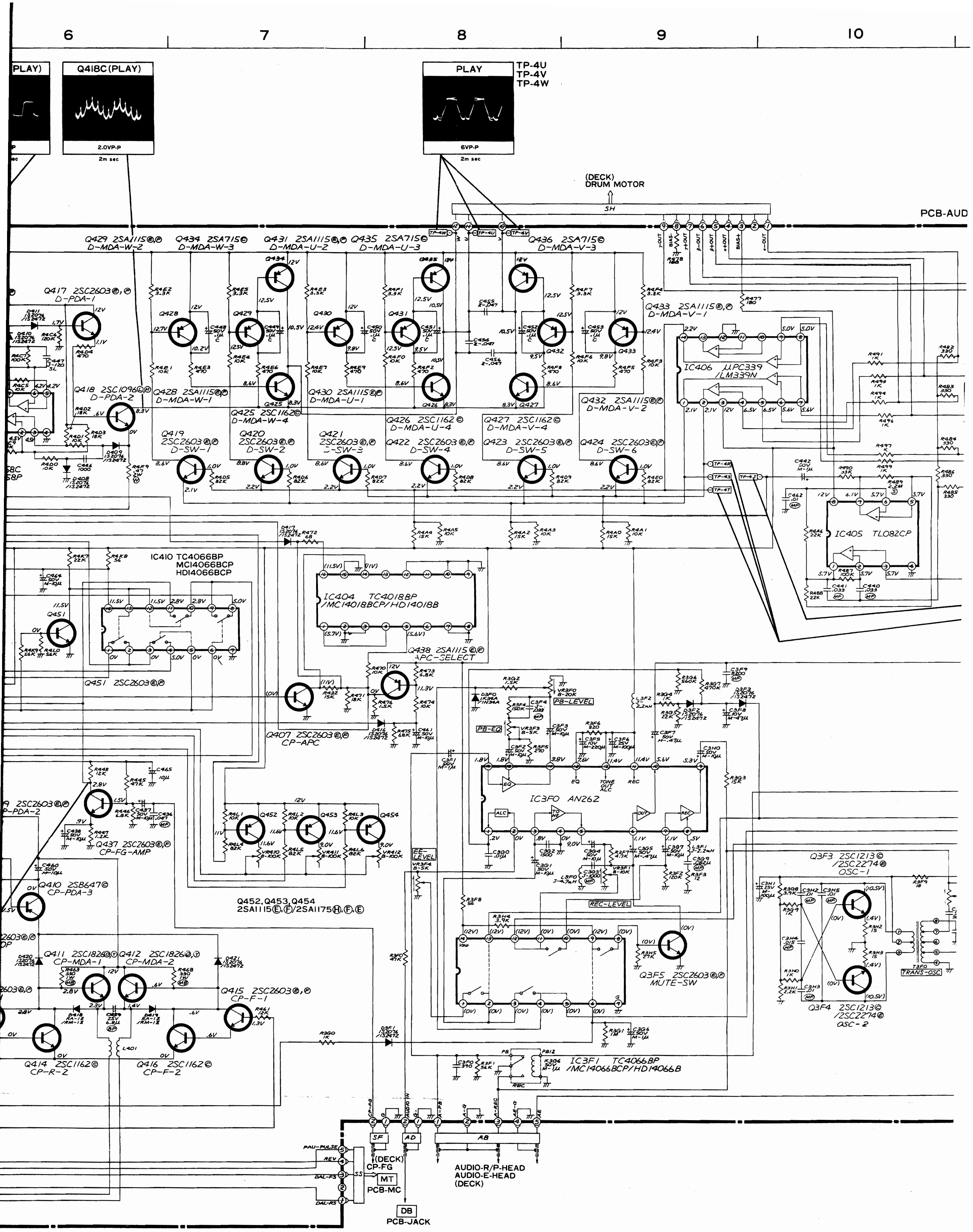
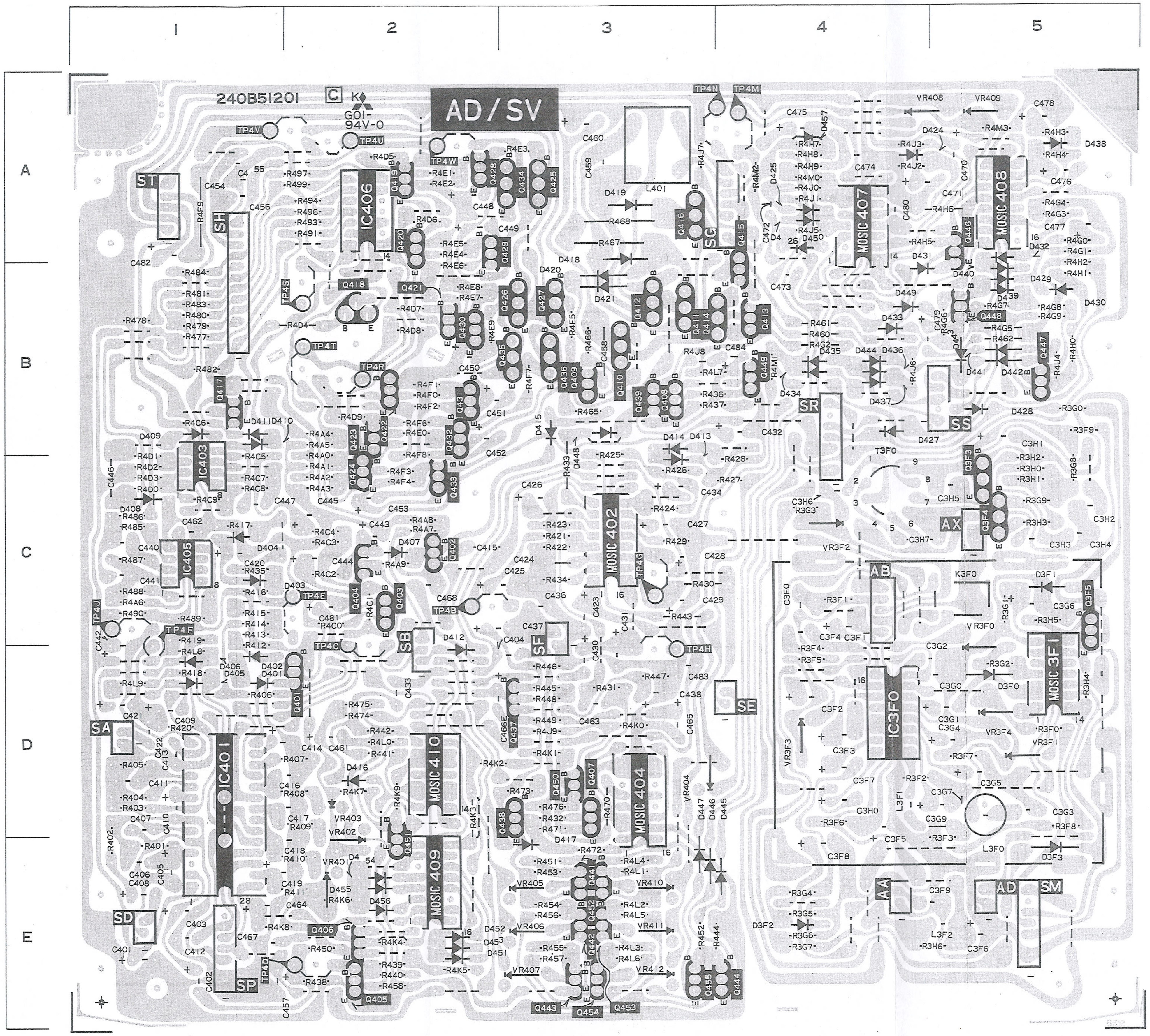
C
D
E
F
IC2A0㉔(PLAY)
0.48VP-P(H)
LPF2A0③(PLAY)
0.38VP-P(H)
TP-2K(PLAY)
1.1VP-P(H)
TP-2C(PLAY)
0.4VP-P
2m sec
TP-2M(REC)
4VP-P(H)
TP-2G(PLAY)
1.9VP-P(H)
TP-2H(PLAY)
1.1VP-P(V)
TP-2L(PLAY)
0.5VP-P
2m sec
IC6F0⑩(PLAY)
0.4VP-P(H)
IC6F0⑭(PLAY)
0.7VP-P(H)
IC6F0⑰(PLAY)
1.0VP-P(H)
(DECK)
VIDEO HEAD
Q2A0 2SA628Ⓔ/2SA1115Ⓔ
Q2A1 2SC710Ⓒ,Ⓓ/2SC2724Ⓒ,Ⓓ
Q201 2SC710Ⓒ,Ⓓ/2SC2724Ⓒ,Ⓓ
Q202 2SC710Ⓒ,Ⓓ/2SC2724Ⓒ,Ⓓ
Q205 2SC1213Ⓒ/2SC2274Ⓔ
Q206 2SC535
Q2B0 2SA693Ⓓ/2SA950Ⓨ
Q2A2 2SC710Ⓒ,Ⓓ/2SC2724Ⓒ,Ⓓ
Q2A3 2SC710Ⓒ,Ⓓ/2SC2724Ⓒ,Ⓓ
Q2A7 2SA628Ⓔ/2SA1115Ⓔ
Q2A8 2SA628Ⓔ/2SA1115Ⓔ
Q203 2SC710Ⓒ,Ⓓ/2SC2724Ⓒ,Ⓓ
Q204 2SA673Ⓒ/2SA950Ⓞ
Q2A9 2SC1213Ⓒ/2SC2274Ⓔ
IC2A0 AN6332 Y-PB
MIX AMP
N.C
C. AMP
C-B/W SW
H.P.A
LIM
FM DET
CLAMP MUTE
EE SW
EE AMP
DO DET
C/BW SW
MIX AMP
GATE AMP
LIMITER
IC201 AN6320N PREAMP
1ST&2ND AMP
FILTER AMP
AMP
HEAD SW
IC2A2 TC4011BP/MC14011BCP
CH-1 HEAD Ⓐ
CH-2 HEAD Ⓐ
PB-FM
EXCEPT PB12
BAL-12
PB-12
AL-12
Q6F0 2SC710Ⓒ,Ⓓ
IC6F0 AN6360 CHROMA
ACC
B.M
6dB UP DOWN
DET
BURST GATE
3dB UP
P.B AMP
LPF6F1
BPF6F1
DL6F0
DL FILTER
REC COLOR
P.B COLOR
Q6F4 2SC711AⒺ
Q6F6 2SC711AⒺ,Ⓕ
Q6F7 2SC711AⒺ,Ⓕ
REC COLOR KILLER
IC6F4 μPC741C
TP-6F
PCB-AUDIO/SERVO
SP
V.SYNC
REF (50Hz)
REC12
FF
TP-6E
AFC
P-COM
V-COM
1/4
90°ROT
GATE
ROTA CONTROL
FSI
1/40
M.M
GATE
SYNC SEP
DOC M.M
DOC/SW
IC6F2 AN6362 CHROMA-AFC
IC6F1 AN6371 CHROMA-APC
AMP
APC P-COM
KILLER P-COM
SW
AMP
KILLER AMP
X-VCO
B.M
Q6F8 2SC711AⒺ,Ⓕ
Q660 2SC711AⒺ,Ⓕ
Q6F2 2SA628
TP-6K
TP-6J
IC6F3 AN6342N
X-OSC
OSC
DIV
PB+12V
50Hz
4.433619MHz
DOC
Q6F3 2SC711AⒺ
IC5001 TC40
IC5004 N50123P
DIV
OSC
Q5003 2SA1115Ⓔ,Ⓕ
Q5004 2SC2603Ⓔ,Ⓕ
Q5006 2SC2603Ⓔ,Ⓕ
IC6F2⑯(PLAY)
IC6F2⑧(PLAY)
IC6F0④(PLAY)
IC6F0⑥(PLAY)
IC6F0⑧(PLAY)
IC6F1⑥(PLAY)
VR6F1(PLAY)

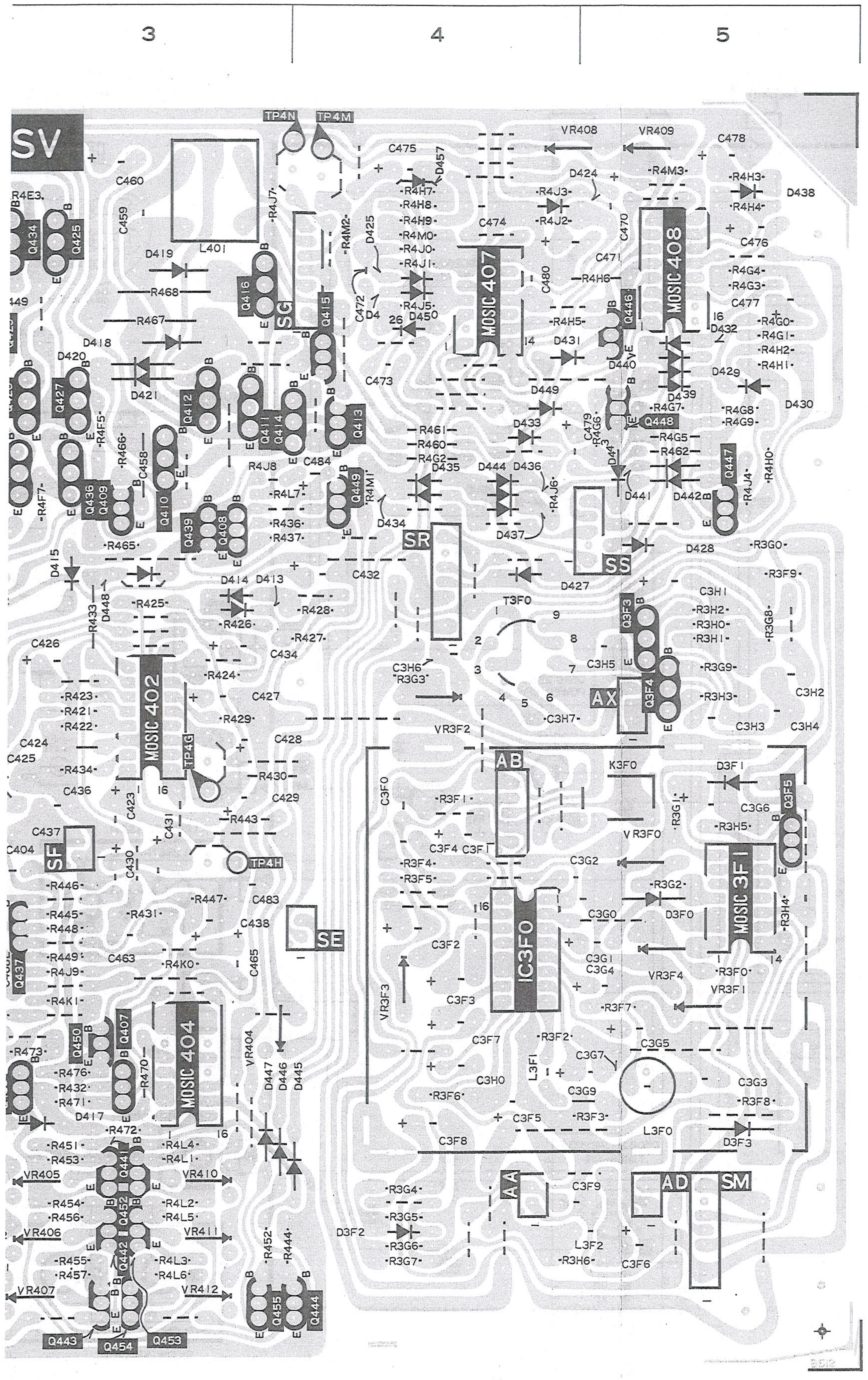

6
7
8
9
10
11
12
TP-2C(PLAY)
0.4VP-P
2m sec
(DECK) VIDEO HEAD
TP-2M(REC)
4VP-P(H)
TP-2G(PLAY)
1.9VP-P(H)
TP-2H(PLAY)
1.1VP-P(V)
TP-2B(REC)
1.0VP-P(H)
IC2A3⑨(REC)
1.1VP-P(H)
PCB-Y/C
Q205 2SC1213Ⓒ/2SC2274Ⓔ
Q206 2SC535
Q202 2SC710Ⓒ,Ⓓ/2SC2724Ⓒ,Ⓓ
IC201 AN6320N PREAMP
FILTER AMP
HEAD SW
Q203 2SC710Ⓒ,Ⓓ/2SC2724Ⓒ,Ⓓ
Q204 2SA673Ⓒ/2SA950Ⓞ
Q2B0 2SA693Ⓓ/2SA950Ⓨ
Q2A9 2SC1213Ⓒ/2SC2274Ⓔ
IC2A2 TC4011BP/MC14011BCP
IC2A3 AN6310
W-D CLIP
SYNC SEP
CLAMP
AGC DET
AGC
FM-MOD
PRE-EN
C-AMP
C-B/W SW
AMP
REC FM
DARK CLIP
WHITE CLIP
CARR SET
EE LEVEL
FM DEV.
Q2B6 2SA1115Ⓔ,Ⓕ
CH-1 HEAD Q
CH-2 HEAD Q
PCB-JACK
DF
PLAY
1.5VP-P(H)
ANTENNA TERMINAL
RF-CONV.
RH
PCB-M/C
MX
PCB-AUDIO/SERVO
SM
SR
Q5002 2SC711AⒺ,Ⓕ
IC5001 TC4011BP
Q5001 2SC711AⒺ,Ⓕ/2SC2603Ⓔ,Ⓕ
Q5003 2SA1115Ⓔ,Ⓕ
IC5004 NS0123P
DIV
OSC
Q5004 2SC2603Ⓔ,Ⓖ
Q5005 2SC2603Ⓔ,Ⓕ
Q5006 2SC2603Ⓔ,Ⓕ
IC6F4 μPC741C
REC COLOR KILLER
TP-6F
Q6F7 2SC711AⒺ,Ⓕ
Q6F8 2SC711AⒺ,Ⓕ
Q6G0 2SC711AⒺ,Ⓕ
IC6F3 AN6342N
X-OSC
DL FILTER
EXCEPT PB12
PB-12
AL-12
DAL-12
EE
REC
PB+12V
4.43361MHz
DOC
VIDEO
VIDEO-OUT
VIDEO-CONV
PB-12
S/P
AL
DAL
PB12
REC-12
EE12
DAL-PB
DL-REC-12
DL-SS
STILL
DL-RS
(PLAY)


1
2
3
4
5
6
C
D
E
F
TP-4C(PLAY) 11VP-P(V)
TP-4A(PLAY) 0.48VP-P(V)
TP-4B(PLAY) 12VP-P(V)
IC401⑬(PLAY) 4.0VP-P 0.5m sec
IC401⑪(PLAY) 2.1VP-P 0.5m sec
Q418C(PLAY 2.0VP-P 2m sec
IC401㉖(PLAY) 4.0VP-P 5m sec
IC401㉓(REC) 8.0VP-P 5m sec
IC401⑥(REC) 8.0VP-P(V)
TP-4D(PLAY) 1.2VP-P 5m sec
TP-4G(PLAY) 12VP-P(V)
TP-4H(PLAY) 4.5VP-P 1m sec
IC402⑮(PLAY) 0.8VP-P(V)
IC407⑪(PLAY) 12VP-P 5m sec
TP-4M(PLAY) 11VP-P 5m sec
TP-4N(PLAY) 12VP-P 5m sec
IC402③(PLAY) 4.0VP-P 5m sec
IC402④(PLAY) 3.4VP-P 2m sec
Q437C(PLAY) 4.4VP-P 1m sec
PCB-Y/C
VP
SP
(DECK)
PICK UP HEAD
SA
PCB-TUNER
TF
ST
PCB-MC
MW
SB
CTL-HEAD
(DECK)
SD
PCB-Y/C
VR
SR
SE
GS
VR4700 B100K
TRACKING
CAPSTAN MOTOR
SLOW SENSER
(BECK)
SG
TRACKING-PRESET
VR404 B-100K
IC401 AN6340
PLAY-SW-POINT-1
REC-SW-POINT
TRAPEZOID
Q401 2SA1115Ⓔ,Ⓕ LEVEL-SHIFT
Q402 2SC2603Ⓔ,Ⓕ UL-SW
Q404 2SC2603Ⓔ,Ⓕ FILTER-2
Q403 2SC2603Ⓔ,Ⓕ FILTER-1
Q417 2SC2603Ⓔ,Ⓕ D-PDA-1
Q418 2SC1096 D-PDA-2
Q429 2SA11 D-MDA-W
IC403 μPC1458C /MC1458P
Q405 2SC2603Ⓔ,Ⓕ CTL-AMP-1
Q406 2SA1115Ⓔ,Ⓕ CTL-AMP-2
Q441 2SA1115Ⓔ,Ⓕ D-SV-1
Q442 2SA1115Ⓔ,Ⓕ D-SV-2
Q443 2SA1115Ⓔ,Ⓕ D-SV-3
Q444 2SC2603Ⓔ,Ⓕ D-SS-SW-1
Q445 2SC2603Ⓔ,Ⓕ D-SS-SW-2
Q450 2SC2603Ⓔ,Ⓕ
IC409 4520
Q451 2SC26
IC402 AN6341N
Q408 2SC2603Ⓔ,Ⓕ CP-PDA-1
Q409 2SC2603Ⓔ,Ⓕ CP-PDA-2
Q410 2SB647Ⓒ CP-PDA-3
Q437 2SC CP-FG-A
Q439 2SC2603Ⓔ,Ⓕ SS-BR
Q449 2SC2603Ⓔ,Ⓕ CP-STOP
Q411 2SC1826Ⓡ CP-MDA-1
Q413 2SC2603Ⓔ,Ⓕ CP-R-1
Q414 2SC1162Ⓒ CP-R-2
Q447 2SC2603Ⓔ,Ⓕ STILL-SW
Q448 2SC2603Ⓔ,Ⓕ REV-SW
IC407 TC4013BP /MC14013BCP/HD14013B
IC408 TC4049BP
Q446 2SA1115Ⓔ,Ⓕ RS-BR


6
7
8
9
10
PLAY)
Q418C(PLAY)
2.0VP-P
2m sec
PLAY
TP-4U
TP-4V
TP-4W
6VP-P
2m sec
(DECK)
DRUM MOTOR
SH
PCB-AUD
Q429 2SA1115Ⓔ,Ⓕ D-MDA-W-2
Q434 2SA715Ⓔ D-MDA-W-3
Q431 2SA1115Ⓔ,Ⓕ D-MDA-U-2
Q435 2SA715Ⓔ D-MDA-U-3
Q436 2SA715Ⓔ D-MDA-V-3
Q417 2SC2603Ⓔ,Ⓕ D-PDA-1
Q433 2SA1115Ⓔ,Ⓕ D-MDA-V-1
Q418 2SC1096Ⓔ,Ⓕ D-PDA-2
Q428 2SA1115Ⓔ,Ⓕ D-MDA-W-1
Q430 2SA1115Ⓔ,Ⓕ D-MDA-U-1
Q425 2SC1162Ⓔ D-MDA-W-4
Q426 2SC1162Ⓔ D-MDA-U-4
Q427 2SC1162Ⓔ D-MDA-V-4
Q432 2SA1115Ⓔ,Ⓕ D-MDA-V-2
Q419 2SC2603Ⓔ,Ⓕ D-SW-1
Q420 2SC2603Ⓔ,Ⓕ D-SW-2
Q421 2SC2603Ⓔ,Ⓕ D-SW-3
Q422 2SC2603Ⓔ,Ⓕ D-SW-4
Q423 2SC2603Ⓔ,Ⓕ D-SW-5
Q424 2SC2603Ⓔ,Ⓕ D-SW-6
IC406 μPC339 /LM339N
IC405 TL082CP
IC410 TC4066BP MC14066BCP HD14066BCP
IC404 TC4018BP /MC14018BCP/HD14018B
Q451 2SC2603Ⓔ,Ⓕ
Q438 2SA1115Ⓔ,Ⓕ APC-SELECT
Q407 2SC2603Ⓔ,Ⓕ CP-APC
Q437 2SC2603Ⓔ,Ⓕ CP-FG-AMP
Q410 2SB647Ⓒ CP-PDA-3
Q452,Q453,Q454 2SA1115Ⓔ,Ⓕ/2SA1175Ⓗ,Ⓕ,Ⓔ
Q411 2SC1826Ⓞ,Ⓨ CP-MDA-1
Q412 2SC1826Ⓞ,Ⓨ CP-MDA-2
Q415 2SC2603Ⓔ,Ⓕ CP-F-1
Q414 2SC1162Ⓒ CP-R-2
Q416 2SC1162Ⓒ CP-F-2
IC3F0 AN262
PB-EQ
PB-LEVEL
REC-LEVEL
REC-LEVEL
Q3F5 2SC2603Ⓔ,Ⓕ MUTE-SW
IC3F1 TC4066BP /MC14066BCP/HD14066B
Q3F3 2SC1213Ⓒ /2SC2274Ⓔ OSC-1
Q3F4 2SC1213Ⓒ /2SC2274Ⓔ OSC-2
T3F0 TRANS-OSC
SF
AD
AB
(DECK) CP-FG
MT
PCB-MC
AUDIO-R/P-HEAD
AUDIO-E-HEAD
(DECK)
DB
PCB-JACK
SS
PAU-PULSE
REV
DAL-FS
DAL-RS


1
2
3
4
5
A
B
C
D
E
240B51201
C
G01-
94V-0
AD/SV
TP4V
TP4U
TP4W
TP4N
TP4M
TP4S
TP4T
TP4R
TP4E
TP4B
TP4C
TP4J
TP4F
TP4G
TP4H
TP4D
ST
SH
SG
SR
SS
AX
AB
SB
SF
SE
SA
SD
SP
AA
AD
SM
IC406
IC403
IC405
IC401
IC3F0
MOSIC 402
MOSIC 404
MOSIC 407
MOSIC 408
MOSIC 409
MOSIC 410
MOSIC 3F1
L401
L3F0
L3F1
L3F2
T3F0
K3F0
VR408
VR409
VR3F0
VR3F1
VR3F2
VR3F3
VR3F4
VR401
VR402
VR403
VR404
VR405
VR406
VR407
VR410
VR411
VR412
Q405
Q406
Q418
Q421
Q443
Q448
Q453
Q454

PCB-AUDIO/SERVO

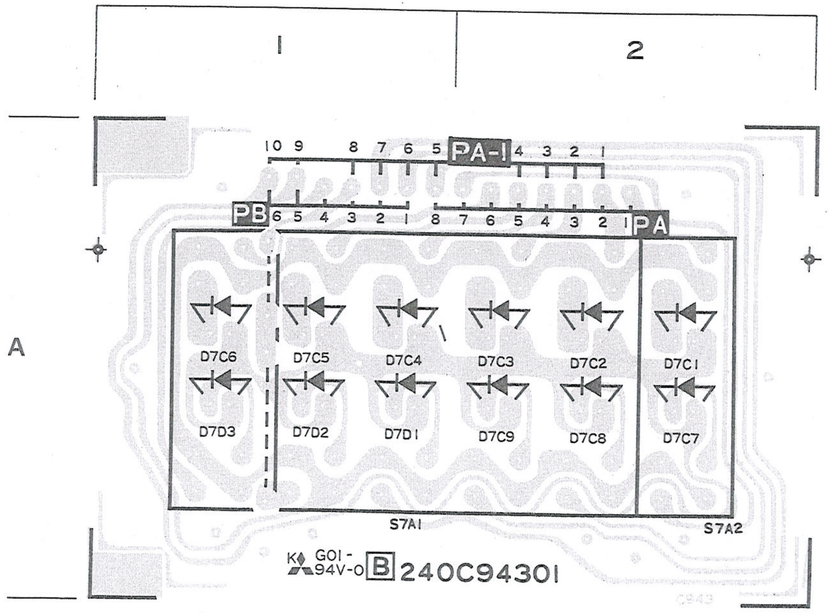

3
4
5
SV
SG
SR
SS
AX
AB
SF
SE
AA
AD
SM
TP4N
TP4M
TP4H
TP4G
MOSIC 402
MOSIC 404
MOSIC 407
MOSIC 408
MOSIC 3F1
IC3F0
VR405
VR406
VR407
VR408
VR409
VR410
VR411
VR412
VR3F2
VR3F3
VR3F4
T3F0
L401
L3F0
L3F1
L3F2
Q443
Q454
Q453
Q455
Q444

PCB-AUDIO/SERVO

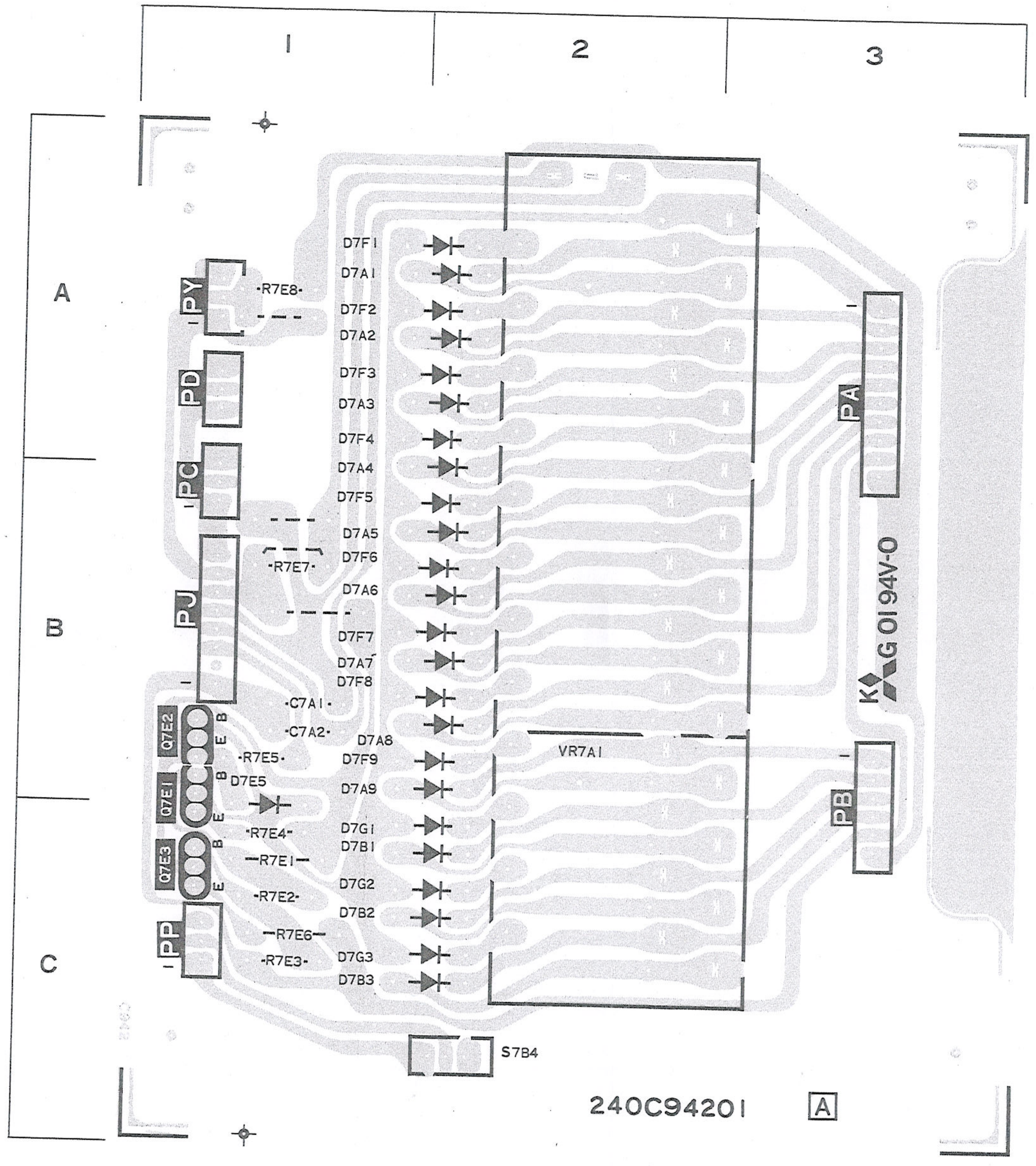
SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS
TP-4B	C-2	TP-4R	B-2	IC402	B-3	Q3F3	B-5
TP-4C	C-2	TP-4S	A-2	IC403	B-1	Q3F4	B-5
TP-4D	D-1	TP-4T	B-2	IC404	D-3	Q3F5	C-5
TP-4E	C-2	TP-4U	A-2	IC405	C-1	Q401	C-2
TP-4F	C-1	TP-4V	A-1	IC406	A-2	Q402	C-2
TP-4G	C-3	TP-4W	A-2	IC407	A-4	Q403	C-2
TP-4H	C-3			IC408	A-5	Q404	C-2
TP-4J	C-1	IC3F0	C-4	IC409	D-2	Q405	D-2
TP-4M	A-4	IC3F1	C-5	IC410	C-2	Q406	D-2
TP-4N	A-4	IC401	D-1			Q407	D-3

SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS
Q408	B-3	Q418	A-2	Q428	A-2	Q438	D-3
Q409	B-3	Q419	A-2	Q429	A-2	Q439	B-3
Q410	B-3	Q420	A-2	Q430	B-2	Q441	D-3
Q411	A-3	Q421	B-2	Q431	B-2	Q442	D-3
Q412	A-3	Q422	B-2	Q432	B-2	Q443	D-3
Q413	B-4	Q423	B-2	Q433	B-2	Q444	D-4
Q414	B-4	Q424	B-2	Q434	A-3	Q446	A-5
Q415	A-4	Q425	A-3	Q435	B-3	Q447	B-5
Q416	A-3	Q426	A-3	Q436	B-3	Q448	A-5
Q417	B-1	Q427	A-3	Q437	C-3	Q449	B-4

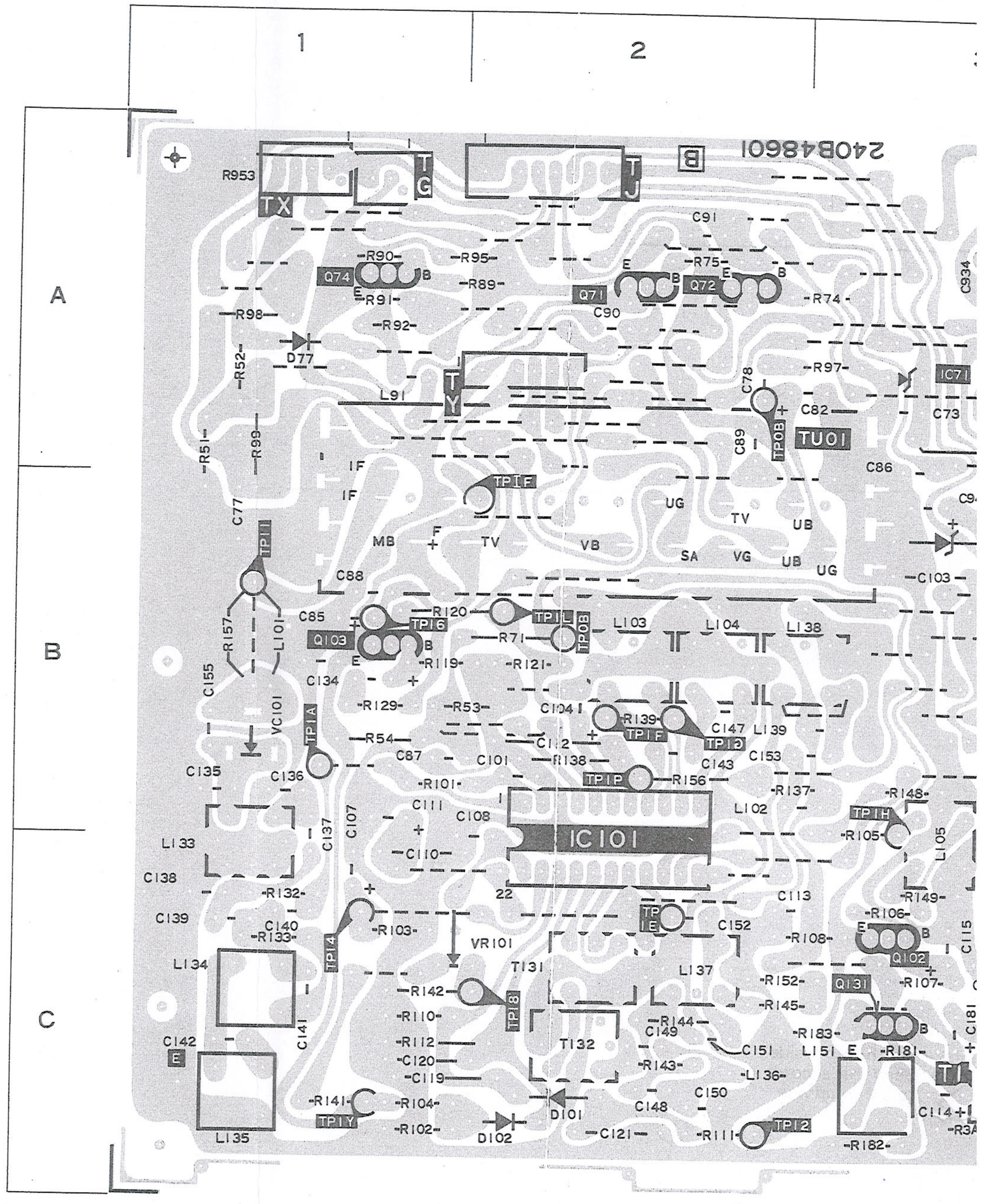
SYMBOL NO.	ADDRESS
Q450	C-3
Q451	D-2
Q452	D-3
Q453	D-3
Q454	D-3
Q455	D-3


1
2
A
PA-1
PB
PA
D7C6
D7C5
D7C4
D7C3
D7C2
D7C1
D7D3
D7D2
D7D1
D7C9
D7C8
D7C7
S7A1
S7A2
G01-94V-0
B
240C94301

PCB-CH.SW

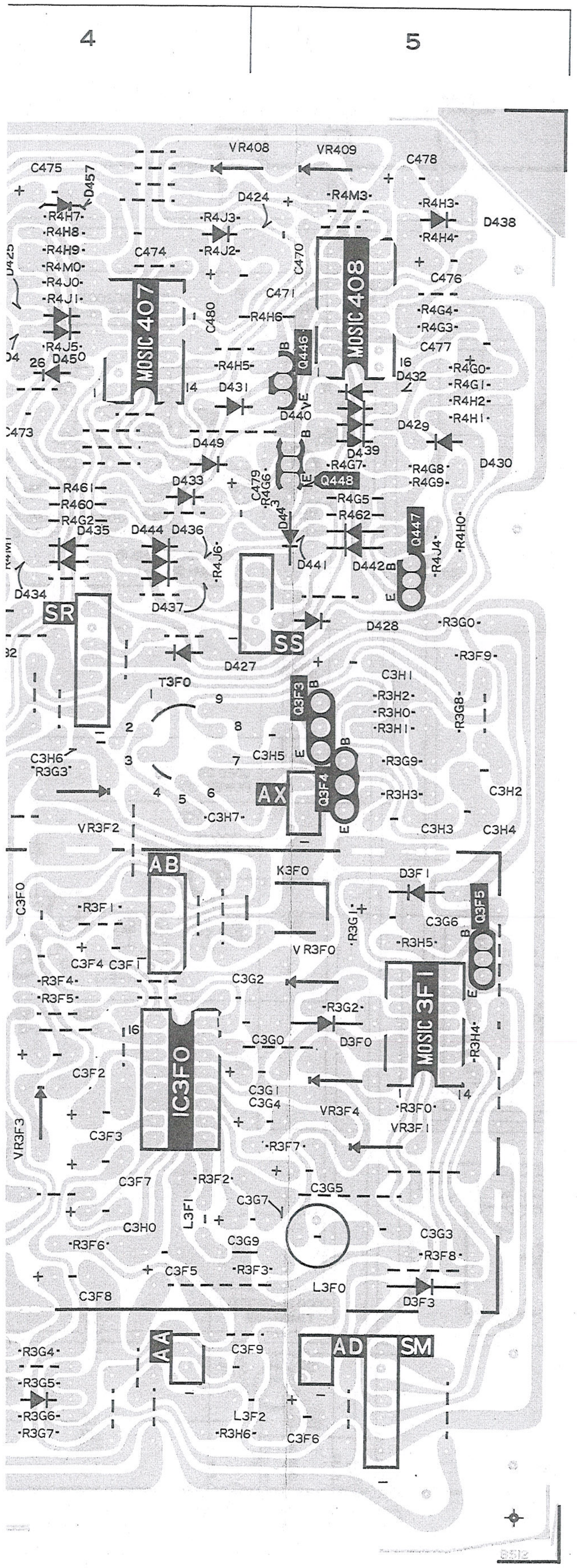

1
2
3
A
B
C
PY
PD
PC
PJ
PP
PA
PB
Q7E2
Q7E1
Q7E3
R7E8
R7E7
R7E5
R7E4
R7E1
R7E2
R7E6
R7E3
C7A1
C7A2
D7E5
D7F1
D7A1
D7F2
D7A2
D7F3
D7A3
D7F4
D7A4
D7F5
D7A5
D7F6
D7A6
D7F7
D7A7
D7F8
D7A8
D7F9
D7A9
D7G1
D7B1
D7G2
D7B2
D7G3
D7B3
VR7A1
S7B4
G0194V-0
240C94201
A

PCB-PRESETTER


1
2
A
B
C
240B48601
B
TX
TG
TJ
TY
TU01
IC101
IC71
Q74
Q71
Q72
Q103
Q102
Q131
VC101
VR101
T131
T132
L91
L101
L102
L103
L104
L105
L133
L134
L135
L137
L138
L139
L151
D77
D101
D102
TP11
TP16
TP1A
TP14
TP18
TP1Y
TP12
TP1F
TP1L
TP1P
TP1H
TP1E
TP0B

PCB-T

SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS
TP-11	B-1	TP-1A	B-1	TP-1P	B-2
TP-12	C-2	TP-1E	C-2	TP-1Y	C-1
TP-14	C-1	TP-1F	B-2	TP-9A	C-4
TP-16	B-1	TP-1G	B-2	TP-9C	B-4
TP-18	C-2	TP-1H	B-3	TP-9D	B-5
TP-21	C-3	TP-1L	B-2	TP-9E	C-4
TP-0B	B-2	TP-1M	C-5	TP-9H	B-4


4
5
VR408
VR409
C478
C475
D457
D424
R4M3
R4H3
D438
R4H4
R4H7
R4H8
R4H9
R4M0
R4J0
R4J1
R4J5
D450
R4J3
R4J2
C474
C470
C476
MOSIC 407
MOSIC 408
C480
C471
R4H6
R4G4
R4G3
C477
Q446
R4H5
D431
D432
R4G0
R4G1
R4H2
R4H1
D440
D429
C473
D449
D439
R4G7
D430
D433
C479
R4G6
Q448
R4G8
R4G9
R461
R460
R462
R4G5
R4G2
D435
D444
D436
D443
Q447
R4J4
R4H0
D441
D442
R4J6
D434
D437
SR
D428
R3G0
SS
R3F9
D427
T3F0
C3H1
Q3F3
R3H2
R3H0
R3H1
R3G8
C3H6
R3G3
C3H5
R3G9
Q3F4
AX
R3H3
C3H2
C3H7
VR3F2
C3H3
C3H4
AB
K3F0
D3F1
C3F0
R3F1
Q3F5
R3G1
C3G6
R3H5
C3F4
C3F1
VR3F0
C3G2
R3F4
R3F5
R3G2
MOSIC 3F1
C3G0
D3F0
R3H4
IC3F0
C3F2
C3G1
C3G4
VR3F4
R3F0
VR3F1
VR3F3
C3F3
R3F7
C3F7
R3F2
C3G7
C3G5
L3F1
C3H0
C3G9
C3G3
R3F6
R3F8
C3F5
R3F3
L3F0
C3F8
D3F3
AA
C3F9
AD
SM
R3G4
R3G5
R3G6
R3G7
L3F2
R3H6
C3F6

SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS
TP-4B	C-2	TP-4R	B-2	IC402	B-3	Q3F3	B-5
TP-4C	C-2	TP-4S	A-2	IC403	B-1	Q3F4	B-5
TP-4D	D-1	TP-4T	B-2	IC404	D-3	Q3F5	C-5
TP-4E	C-2	TP-4U	A-2	IC405	C-1	Q401	C-2
TP-4F	C-1	TP-4V	A-1	IC406	A-2	Q402	C-2
TP-4G	C-3	TP-4W	A-2	IC407	A-4	Q403	C-2
TP-4H	C-3			IC408	A-5	Q404	C-2
TP-4J	C-1	IC3F0	C-4	IC409	D-2	Q405	D-2
TP-4M	A-4	IC3F1	C-5	IC410	C-2	Q406	D-2
TP-4N	A-4	IC401	D-1			Q407	D-3

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Q408	B-3	Q418	A-2	Q428	A-2	Q438	D-3
Q409	B-3	Q419	A-2	Q429	A-2	Q439	B-3
Q410	B-3	Q420	A-2	Q430	B-2	Q441	D-3
Q411	A-3	Q421	B-2	Q431	B-2	Q442	D-3
Q412	A-3	Q422	B-2	Q432	B-2	Q443	D-3
Q413	B-4	Q423	B-2	Q433	B-2	Q444	D-4
Q414	B-4	Q424	B-2	Q434	A-3	Q446	A-5
Q415	A-4	Q425	A-3	Q435	B-3	Q447	B-5
Q416	A-3	Q426	A-3	Q436	B-3	Q448	A-5
Q417	B-1	Q427	A-3	Q437	C-3	Q449	B-4

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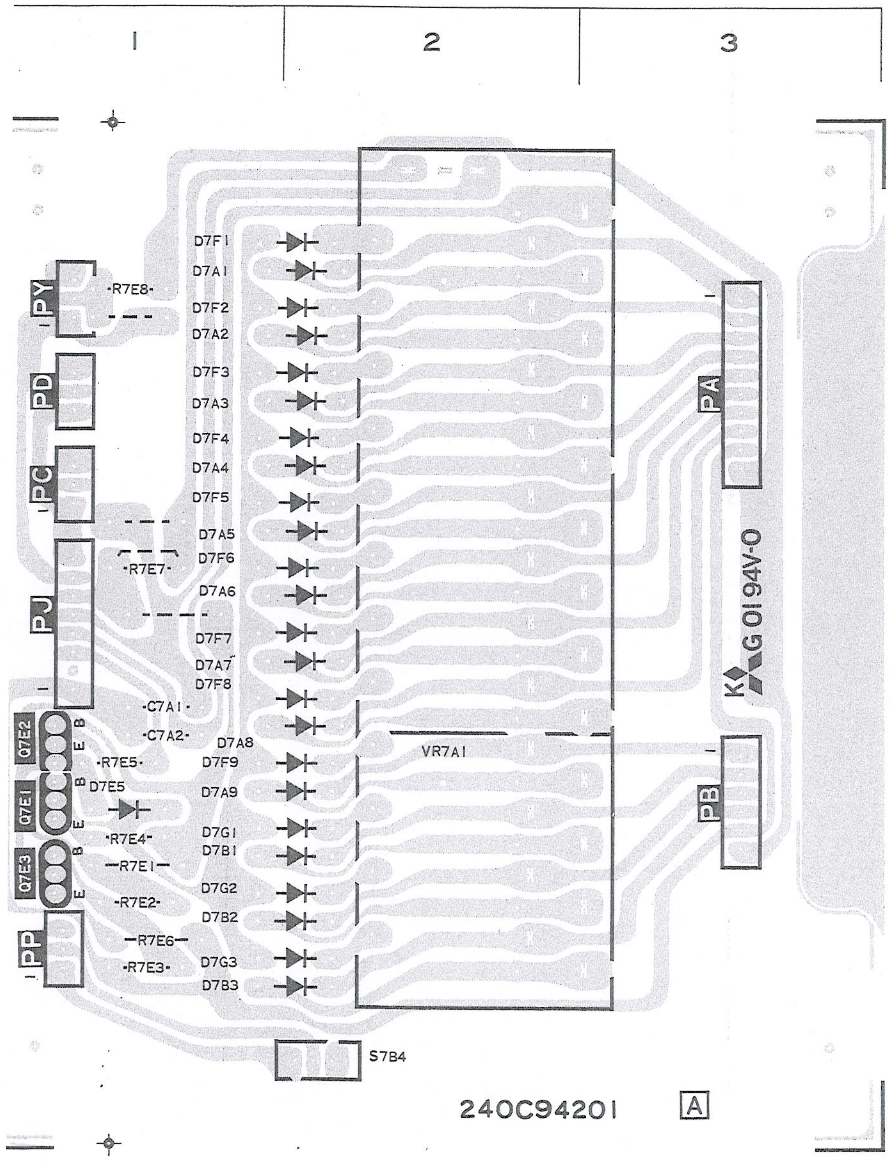

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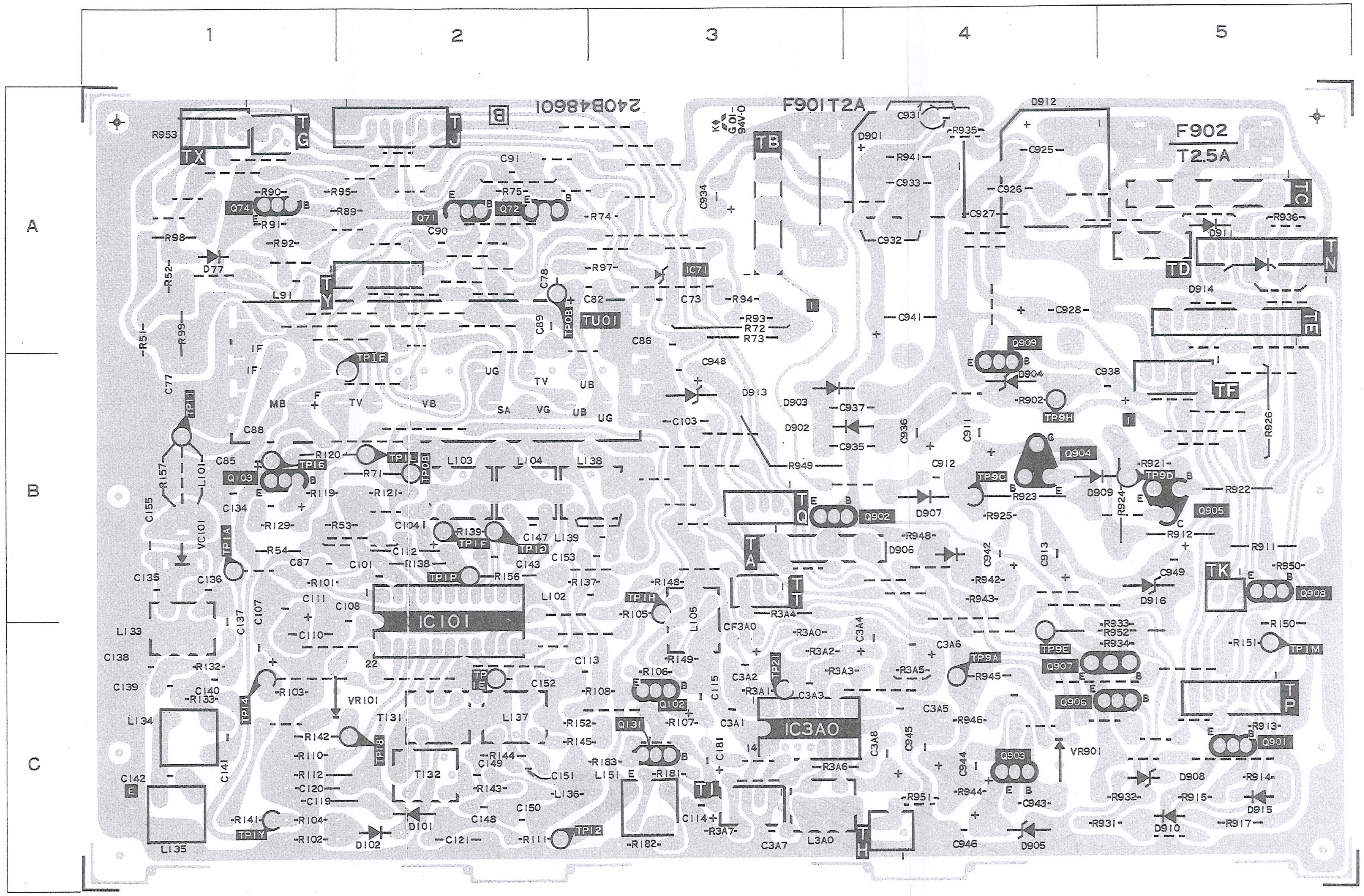

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PCB-TUNER

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TP-12	C-2	TP-1E	C-2	TP-1Y	C-1			Q102	C-3	Q905	B-5
TP-14	C-1	TP-1F	B-2	TP-9A	C-4	IC101	C-2	Q103	B-1	Q906	C-5
TP-16	B-1	TP-1G	B-2	TP-9C	B-4	IC3A0	C-3	Q131	C-3	Q907	C-5
TP-18	C-2	TP-1H	B-3	TP-9D	B-5			Q901	C-5	Q908	B-5
TP-21	C-3	TP-1L	B-2	TP-9E	C-4	Q71	A-2	Q902	B-4	Q909	B-4
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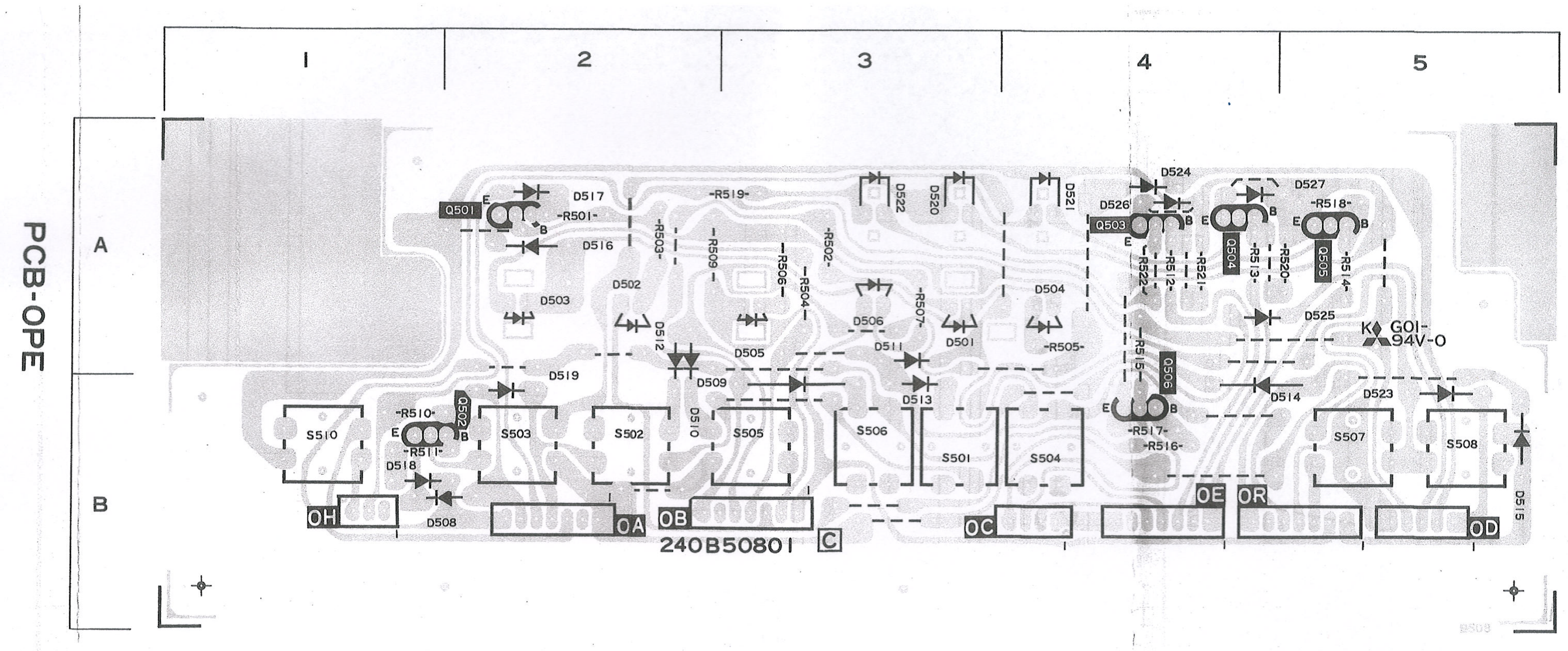
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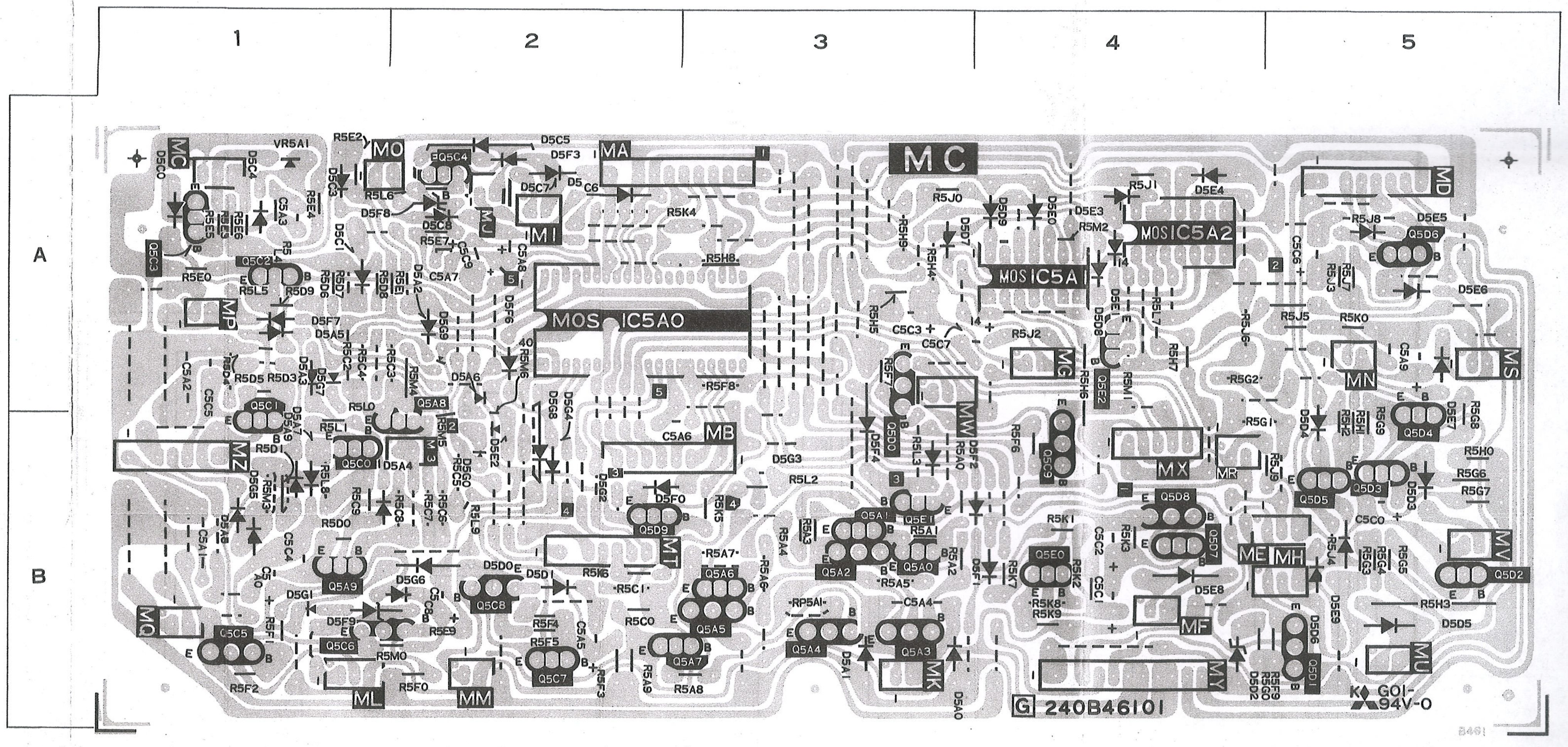
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IC5A1	A-4	Q5A4	B-3	Q5C1	B-1	Q5C8	B-2	Q5D5	D-5	Q5E2	A-4
IC5A2	A-4	Q5A5	B-3	Q5C2	A-1	Q5C9	B-4	Q5D6	A-5		
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Q5A0	B-3	Q5A7	B-3	Q5C4	A-2	Q5D1	D-5	Q5D8	B-4		
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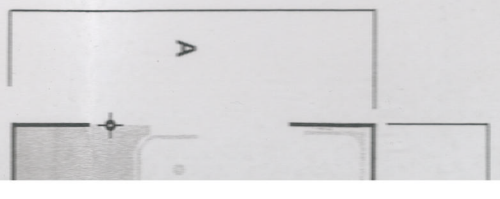

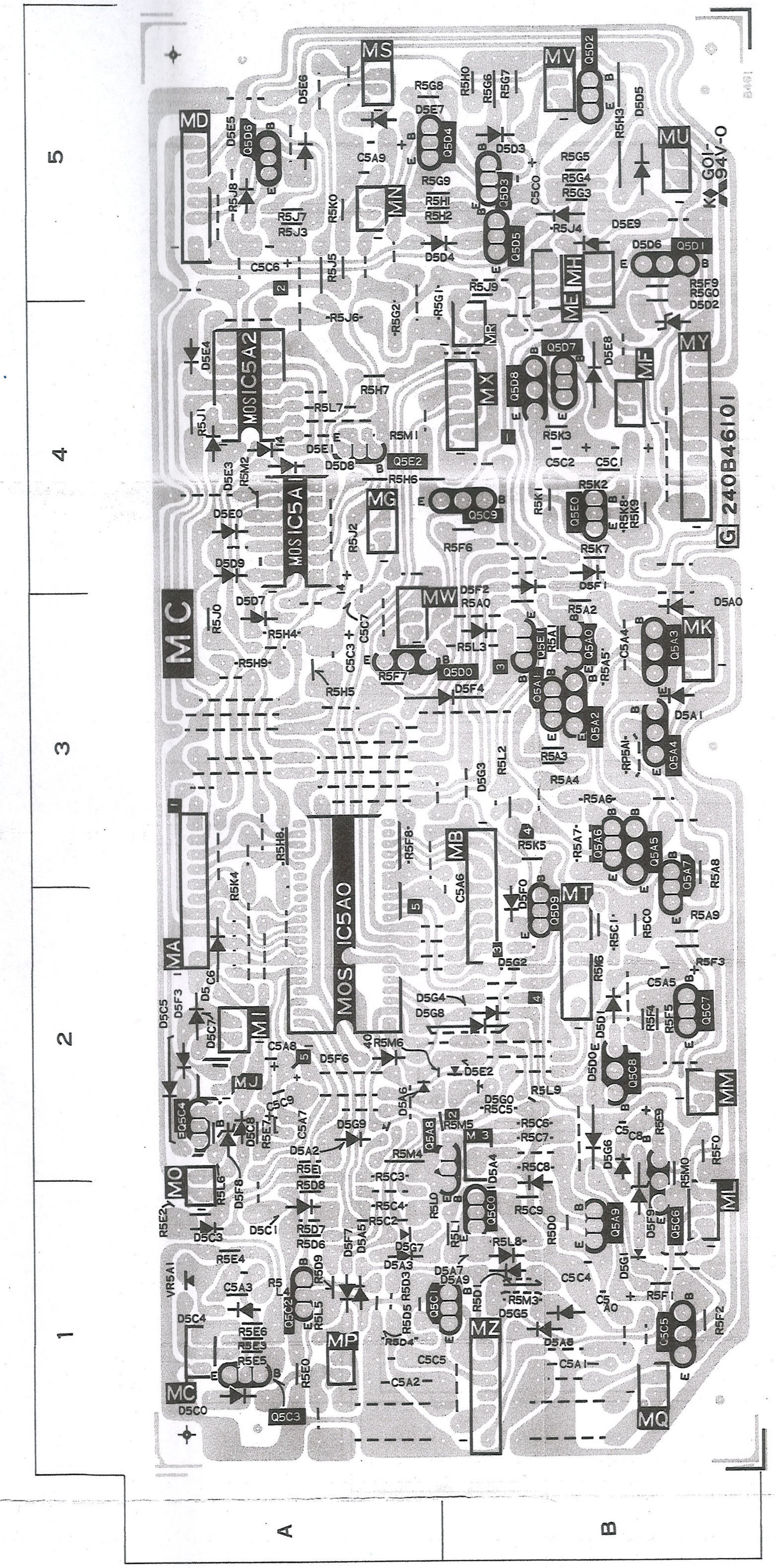
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PCB-MC

SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS	SYMBOL NO.	ADDRESS
IC5A0	A-2	Q5A3	B-3	Q5C0	B-1	Q5C7	B-2	Q5D4	A-5	Q5E1	B-3
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IC5A2	A-4	Q5A5	B-3	Q5C2	A-1	Q5C9	B-4	Q5D6	A-5		
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Q5A0	B-3	Q5A7	B-3	Q5C4	A-2	Q5D1	D-5	Q5D8	B-4		
Q5A1	B-3	Q5A8	B-2	Q5C5	B-1	Q5D2	D-5	Q5D9	B-2		
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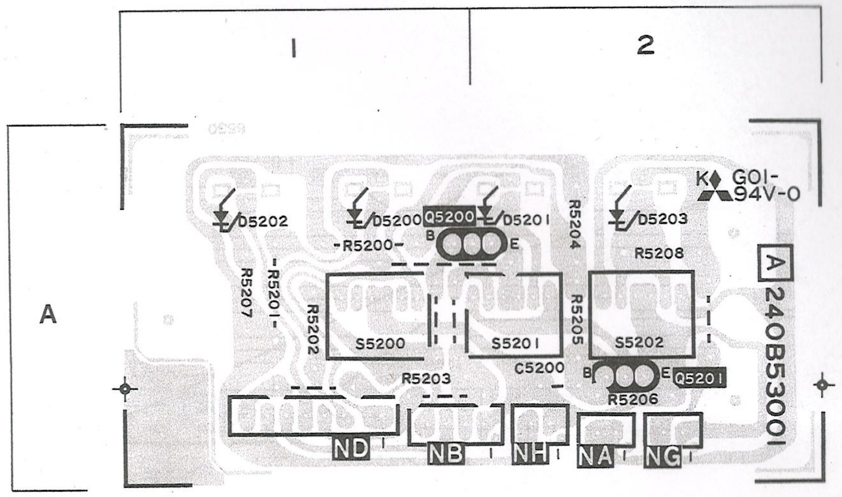
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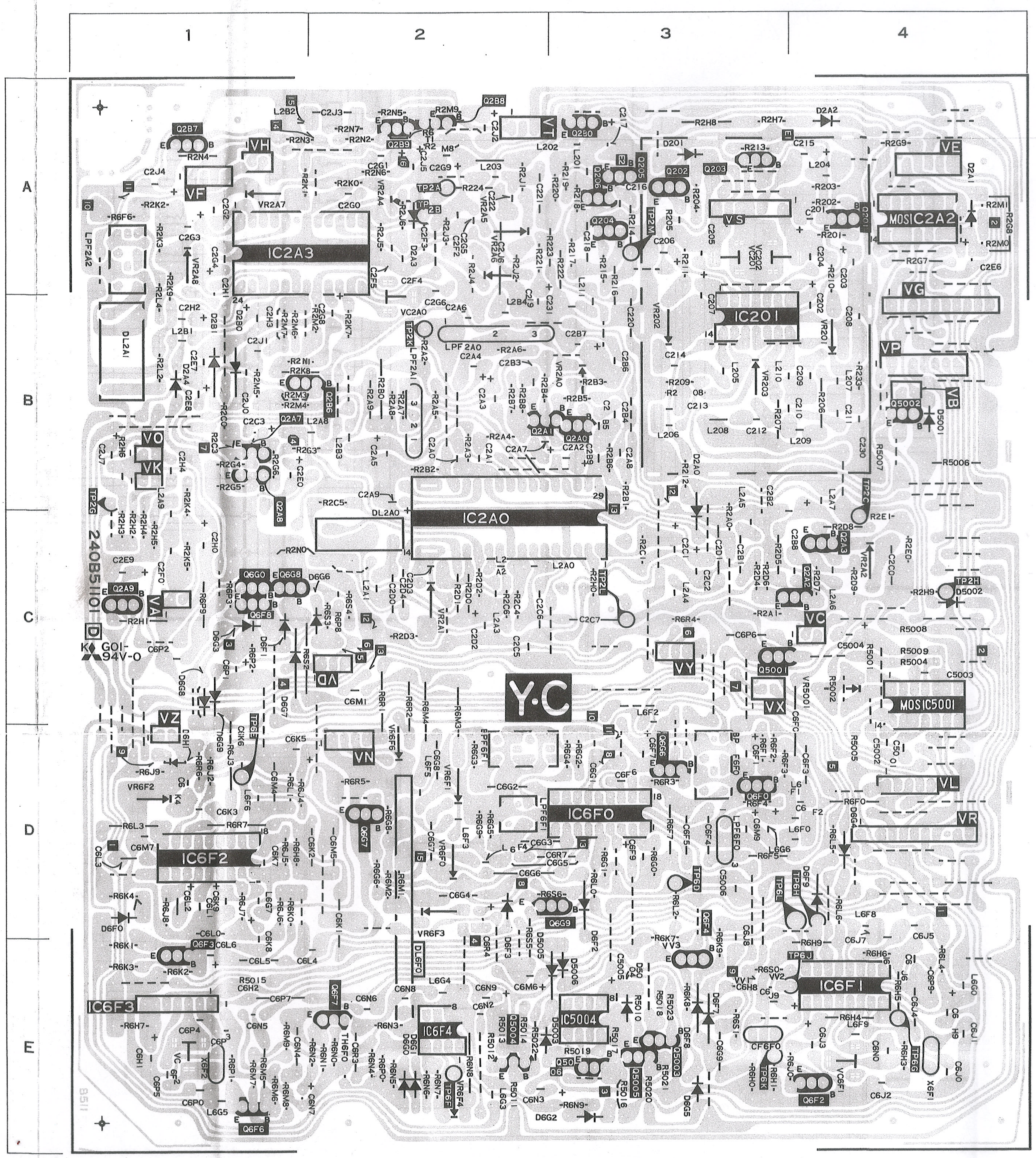
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PCB-Y/C

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TP-2B	A-2	TP-6G	E-4	IC5001	C-4	Q203	A-3	Q2A9	C-1	Q6F2	E-4
TP-2C	C-4	TP-6H	D-4	IC5004	E-3	Q204	A-3	Q2B0	A-3	Q6F3	E-1
TP-2G	B-1	TP-6J	E-4	IC6F0	D-3	Q205	A-3	Q2B6	B-1	Q6F4	E-3
TP-2H	C-4	TP-6K	E-3	IC6F1	E-4	Q206	A-3	Q2B8	A-2	Q6F6	E-1
TP-2K	B-2	TP-6L	D-4	IC6F2	D-1	Q2A0	B-3	Q5001	C-3	Q6F7	E-2
TP-2L	C-3			IC6F3	E-1	Q2A1	B-2	Q5002	B-4	Q6F8	C-1
TP-2M	A-3	IC201	B-3	IC6F4	E-2	Q2A2	C-4	Q5003	E-3	Q6G0	C-1
TP-6D	D-3	IC2A0	C-2			Q2A3	C-4	Q5004	E-2		
TP-6E	D-1	IC2A2	A-4	Q201	A-4	Q2A7	B-1	Q5005	E-3		